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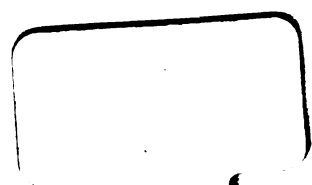
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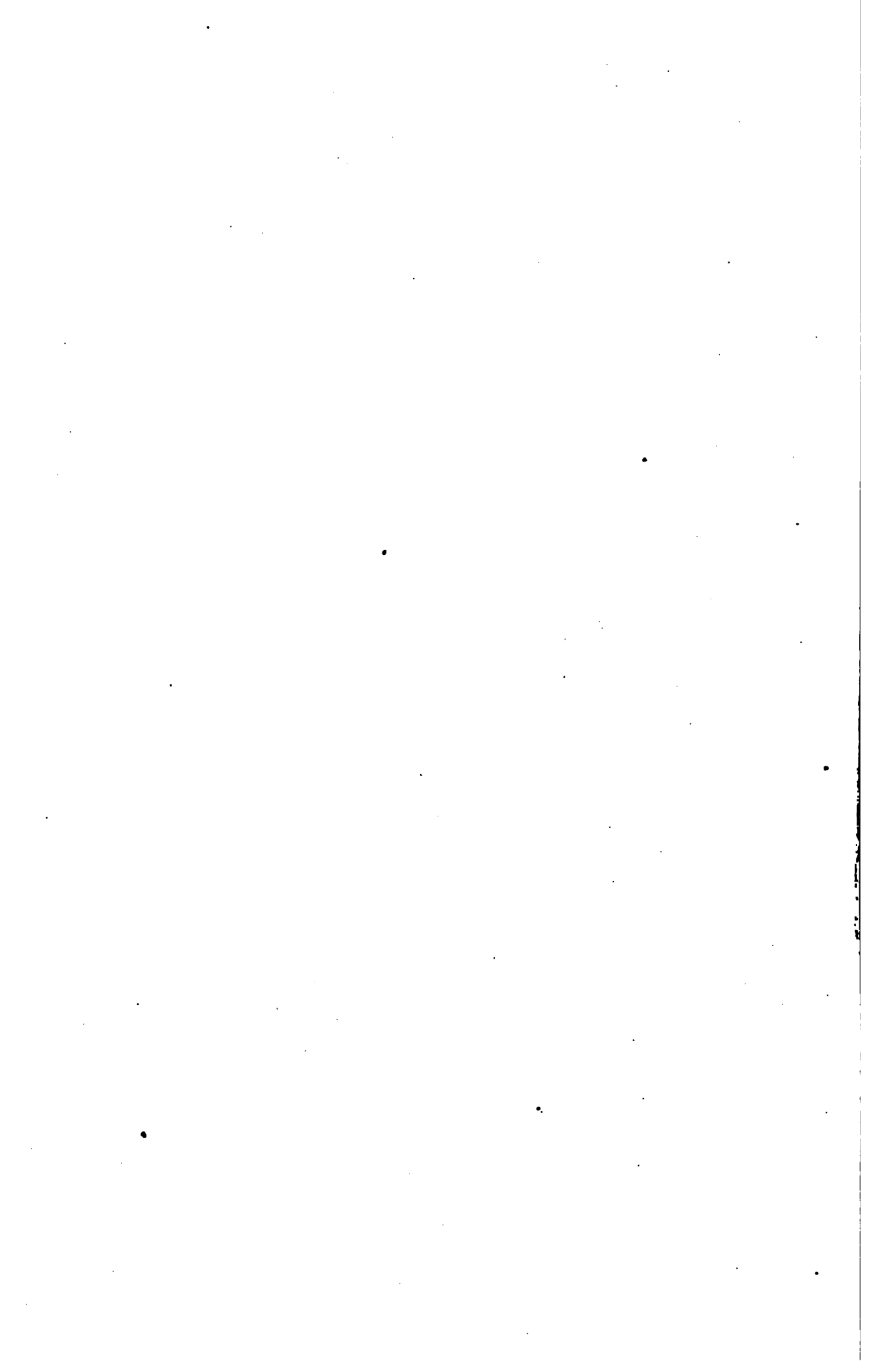
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CLOSING ARGUMENT

OF

ADOLPH SUTRO,

IN THE PENDING BILL TO AID

THE SUTRO TUNNEL,

DELIVERED BEFORE THE

COMMITTEE ON MINES AND MINING

OF THE

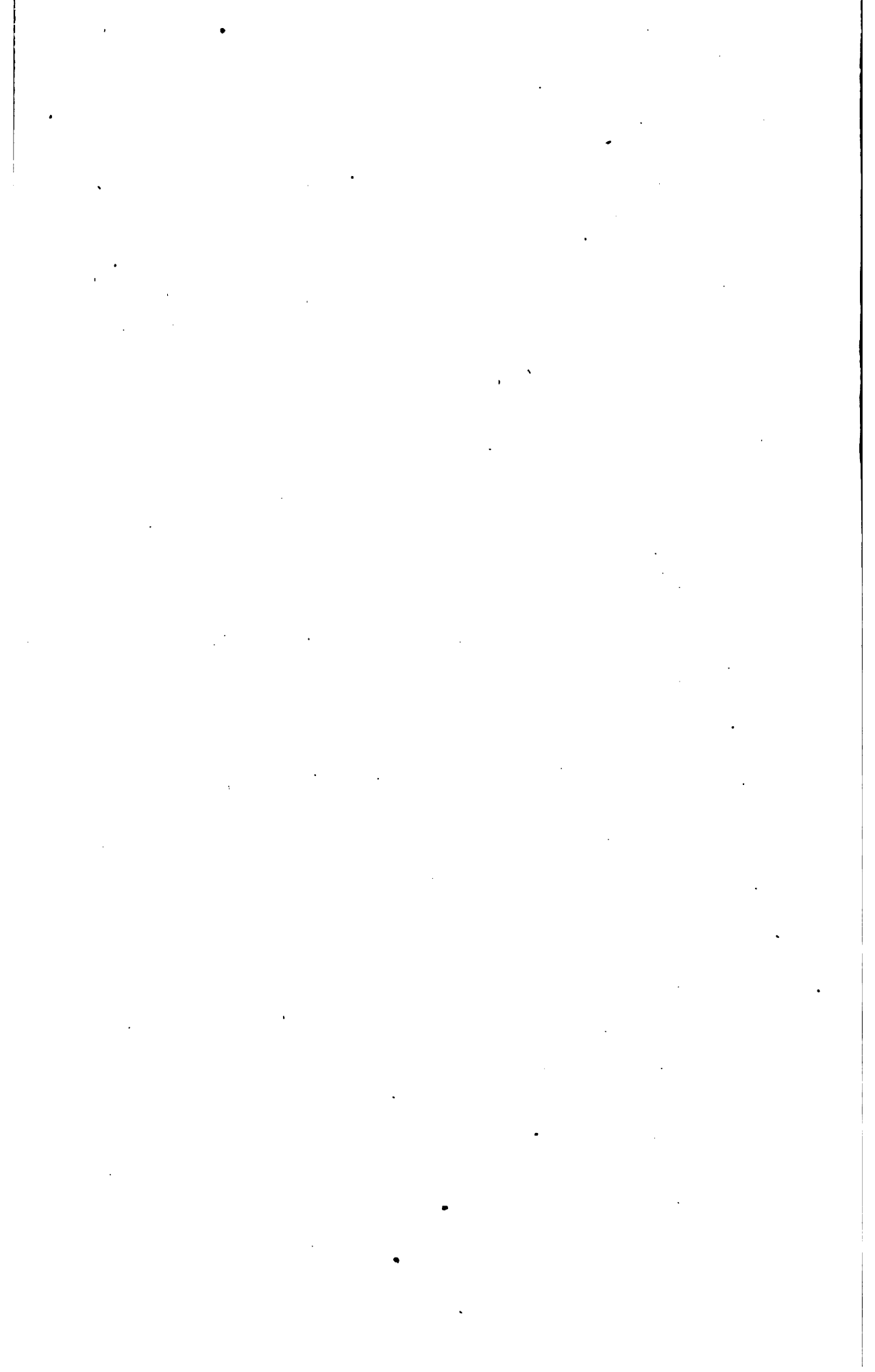
HOUSE OF REPRESENTATIVES OF THE UNITED STATES OF
AMERICA,

MONDAY, APRIL 22, 1872.

WASHINGTON, D. C.:

SMITH & WISEBROW, PRINTERS AND STEREOTYPERS.

1872.



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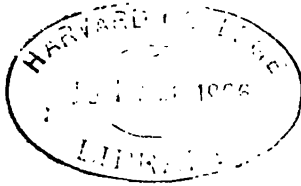


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Eng 1438.72.5



Almon Danforth Hodges
Class of 1889

"I may be permitted to add, that a subterranean work so bold and gigantic should lend an elevating feeling of moral strength to a people, who do not estimate their own worth by the number of souls, but by their patriotism; this feeling becomes particularly important in times when everybody strives to a paltry appeasing of momentary wants, and an undertaking which, in contrast to this strife, creates for a distant future, must appear ennobled and of superior relations." (*Alex. Von Humboldt on the "Deep Meissen Tunnel" in Saxony.*)

"The execution of a work which, in times to come, will be classed in the list of those *great national monuments*, which have for their object the lasting welfare of a country, and which will secure the same for the latest generations and times, cannot be left to a single mining district, but should be looked upon as a work creating happiness and glory, and worthy of the participation and promotion by the entire nation." (*Baron Von Herder on the "Deep Meissen Tunnel" in Saxony.*)

ARGUMENT.

Mr. CHAIRMAN. Eight years ago I concluded to wind up all the affairs in which I was then engaged, in order to devote myself to the execution of a work which I looked upon and now consider of the highest importance to the country.

At that time I expected that many obstacles would present themselves in the execution of so difficult and extensive an undertaking, but little did I dream that, after eight years of toil, anxiety, and labor, I would find myself before a committee of the Congress of the United States, *still* under the necessity of demonstrating what appeared to me self-evident from the beginning.

Great improvements, as the word implies, often involve the abandonment of the previous less advantageous methods, and hence we almost invariably find more or less hostility from some quarter or the other, but sometimes, also, opposition arrayed against undertakings which promise magnificent results, prompted by greed, avarice, and jealousy.

I have encountered my full share of all these; but, as obstacles after obstacles presented themselves, they only nerved me on to overcome them, and I fully concluded to devote, if necessary, the whole balance of my life to the execution of this *one* work, believing, as I do, that it is one of the most important, if not the most important one now in progress on this continent.

By your permission, Mr. Chairman and gentlemen of the committee, I will now proceed to give a brief history of the Sutro tunnel, as it is called, its advantages in facilitating mining operations, the bearing it has upon the national prosperity, and also throw some light upon the character and motives of the opposition.

HISTORY OF THE TUNNEL.

The year 1859 marked the discovery of the Comstock lode. Up to that time no mines of any importance were known to have existed on the eastern side of the Sierra Nevada mountains, and when news suddenly reached California that silver ore had been found there of fabulous richness and extent, the people became imbued with an immense excitement, and rushed in thousands to the spot. The winter set in with its hindrances, but the rush continued. Spring came, and there was no falling off. People believed, and were justified in the belief, that there in Nevada they had discovered an El Dorado unsurpassed by any; and being interested in mining, and feeling considerable curiosity to see the spot myself, I went over there in March, 1860—as soon as it was practicable to cross the mountains—and began a series of examinations. I had expected to witness an extraordinary deposit, but I must say that I was truly astonished at the magnitude and importance of the discoveries which had been made. At that time only forty tons of ore had been taken from the mines and sent to San Francisco. Their reduction yielded a sum in the gross of \$160,000, or an average of \$4,000 to the ton—the most profitable forty tons probably that have ever been worked from that lode. I examined the topography of the country, and recognized the fact at a glance that nature had so favored the locality that the greatest facilities existed for the construction of a deep adit or tunnel; and as early as the month in which I went there—when I had been there, in fact, but a few days—I wrote a letter to a newspaper published in San Francisco, the *Alta California*, giving some interesting information about the mines. The communication appeared on the 20th of April, 1860, and contains these reflections:

“The working of the mines is done without any system as yet. Most of the companies commence without an eye to future success. Instead of running a tunnel from low down on the hill, and then sinking a shaft to meet it, which at once insures drainage, ventilation, and facilitates the work by going upwards, the claims are mostly entered from above and large openings

made, which require considerable timbering, and exposes the mine to all sorts of difficulties."

I wrote that when I had been there only a week, and when I did not know to my entire satisfaction that there was an extensive vein of ore there. Such explorations as had then been made did not extend to a greater depth than twenty or thirty feet.

At another point in the same article I remarked:

"Smelting furnaces, quartz crushers, and all the machinery required for the successful reduction of the ore, could be erected in the valley, and an inexhaustible supply of wood and timber furnished by floating it down Carson river from points some distance above, where there is an abundance of it."

At this time, it should be borne in mind, not a single road had been constructed in that country. The discovery had barely been made, and the mines had only been opened to a very limited extent. I became interested, more or less, in operations there. In 1861 I erected a mill and reduction works, and took up my residence in the neighborhood of the Comstock.

FRANCHISE BY THE LEGISLATURE.

I watched the current of events, and day after day it became plainer to me that there was absolute necessity for a deep mining tunnel. It was clear to my mind, although the idea was very generally scouted. People thought an undertaking of the nature I planned could never be consummated in Nevada. It would take too long a time, and funds would be insufficient, they said; but in the fall of 1864, when our Legislature met at Carson, I petitioned for a franchise, and a bill was drafted, giving me and my associates the right of way for a tunnel, as far as it lay in the power of the State Legislature to give it. (a) The question of payments to be made to the tunnel company was left an open one, subject to such agreements as we might be able to make with the mines. It was, therefore, a sort of franchise such as would have been given to a toll road, or any similar improvement, and not that much. A few thinking

(a) See book on Sutro Tunnel, page 171.

men in the Legislature were struck at once with the idea, and they investigated the matter, although the majority of them said I must be hopelessly insane to propose anything of the kind, and would waste my time for nothing, for the project could never be carried out—the majority of them, I say, ridiculed it. But they granted the franchise by a unanimous vote, nevertheless, and I proceeded without delay to submit the question to the companies owning and operating the mines. I had made a beginning then. I had some rights with which to start out. I had obtained a franchise. The question had assumed a tangible form.

CONTRACTS WITH THE MINING COMPANIES.

A number of us entered into an association, with Senator Stewart for president, and we submitted our proposition to the mining companies. I demonstrated the advantages of the tunnel, and in February, 1865, I published a pamphlet explaining the whole subject, (a) and towards the latter part of the year, after many months of labor, by dint of perseverance, I succeeded in making certain contracts, which were nearly all completed by February or March, 1866. There was no little difficulty attending my progress.

The mining companies, or the men managing the mines, felt very slight interest in the question, and rather preferred not to bother themselves with listening to me. It was not opposition; it was only indifference. There was no opposition; yet it took me eight months of the hardest work I have done in this whole matter to make the people out there understand the merits of the case. We employed some able lawyers, and so did the mining companies. The latter retained, amongst others, Mr. Crittenden, whose melancholy death at the hands of Mrs. Fair you all remember, and on our side were Judge Hardy and others. The best lawyers of California, in fact, were retained in our respective interests. They deemed the contracts very important, and spent months and months in the prepara-

(a.) See pamphlet, "Necessity of a Deep Tunnel."

tion of agreements, by which the mining companies were to bind themselves to pay the tunnel company \$2 a ton on each and every ton of ore that might be extracted for all time to come. These agreements were executed on parchment, and the care with which they were gotten up will indicate at a glance that they were intended to last a great many years, and probably for a century. (a)

PEOPLE BECOMING INTERESTED IN THE SUBJECT.

After my pamphlet had been thoroughly distributed and discussed, I found almost everybody was becoming anxious to have the tunnel made. They began to comprehend it then. They appreciated the magnificence of the undertaking, and, instead of throwing obstacles in my way, they all joined together to help me, the Bank of California among them. They confessed that they could see no money in it then, but they could see a great many difficulties ahead, and they were willing to second my endeavors with their assistance. The royalty of \$2 a ton was regarded as a mere bagatelle. No one thought of it at all as an adequate compensation for the manifold benefits the tunnel would confer; and the trustees of the mining corporations, who often met at my solicitation, and whose meetings I invariably attended for the purpose of explaining my project, the most of whom had been at first unacquainted with the advantages a deep tunnel would furnish, became firm in their conviction that, even at a royalty of \$6 or \$8 per ton, it would be advantageous to them.

THE BANK OF CALIFORNIA FAVORS THE ENTERPRISE.

The Bank of California seemed particularly anxious to help me. They have since been arrayed against me in the bitterest hostility. They have left no stone unturned which could conduce towards the breaking up of the work; and Wm. C. Ralston, the cashier of the bank, who lives in princely style, in a magnificent dwelling, with sixty horses

(a) See book on Sutro Tunnel, p. 173.

in his stables—a man who was at that time a warm friend of the tunnel, and has since grown rich by manipulating these mines—is now its enemy. I have in my possession a letter written by him at that time, which I have never produced before, for it is a private letter, given me as an introduction to certain parties, which during six years of warfare I have kept inviolate, although there is nothing of a confidential character about it. I may as well use it now. It will serve to show the opinion this Mr. Ralston once entertained of the Sutro tunnel. I will read it:

"THE BANK OF CALIFORNIA.

"D. O. MILLS,
"President.

W. C. RALSTON,
Cashier.

"SAN FRANCISCO, May 4, 1866.

"To the ORIENTAL BANK CORPORATION, London.

"DEAR SIR: This letter will be presented to you by Mr. A. Sutro, of this city, who visits England with the view of laying before capitalists there a very important enterprise, projected by himself, and known as the 'Sutro tunnel,' in the State of Nevada. This tunnel is designed to cut the great Comstock lode or ledge, upon which our richest silver mines are located, at a depth of two thousand feet from the surface, to drain it of water, render it easily accessible at that point, and thus increase the facilities and diminish the expenses of the progressive development of these mines.

"*Too much cannot be said of the great importance of this work, if practicable upon any remunerative basis. We learn that the scheme has been very carefully examined by scientific men, and that they unhesitatingly pronounce in its favor on all points—practicability, profit, and great public utility.* Mr. Sutro, we presume, is furnished with the necessary documents to make this apparent; and our object in this letter is simply to gain for him, through your kindness, such an introduction as will enable him to present his enterprise to the public fairly and upon its merits.

"Commending Mr. Sutro to your courteous attentions, we remain, dear sirs, yours, very truly,

"W. C. RALSTON,
"Cashier."

That this same Mr. Ralston has since been moving heaven and earth to break up this tunnel enterprise I shall fully explain in the course of my remarks.

LAW PASSED BY CONGRESS.

After I had finished the making of these contracts, I set out for Washington, with the intention of getting certain rights from the General Government which no State government could give me; for the fee to the public domain, (a)

(a) See Testimony, pp. 197, 222, 234.

as far as these mines are concerned, was then entirely, and is to this day to a large extent, in the Government. (a) I was to secure certain immunities at the capital, and then go to Europe, for the purpose of negotiating stock or obtaining the pecuniary loans which would be required to carry out the work. Nothing was said at that time about any direct aid from the Government.

I arrived in Washington about the beginning of June, 1866; and on the 25th of July a law of Congress was approved, (b) granting to me the right of way and other privileges to aid in the construction of an exploring and draining tunnel to the Comstock lode, in the State of Nevada. It gave us the privilege of buying some land at the mouth of the tunnel, which we already owned by location, and the right to take such veins of ores as we might cut in running the tunnel, and which we would have had under the common mining law; confirms the rates made in these contracts of \$2 a ton; and makes the patents of mining companies thereafter obtained subject to the condition that this royalty be paid. (c) It was necessary that we should have some such protection as this in the work, for corporations are liable to disincorporate, with disastrous effect upon the binding force of contracts. I found, by consultation with eminent lawyers, that it was absolutely necessary to have some such rights from the Government; and on presentation in Congress the delegation from California and Nevada agreed with me, and the bill which I desired became a law.

NECESSITY OF A COMPULSORY LAW.

Mr. Sunderland, in summing up the evidence which has been taken here, says that this law places some of the mining companies who did not sign the contract under the same obligations as those who did. He says he was a trustee at the time, and *he* did not sign a contract. That is precisely what we wanted to remedy. There were men

(a) See Test., pp. 190, 222, 223, 373. (b) See Statutes at Large, vol. 14, p. 242.
(c) See Test., pp. 221, 222, 282.

in Nevada who were ambitious to play "dog in the manger." They did not want to do anything. They did not want to build the tunnel; but if it should be built they wanted to have the benefit of it, for if we should run it in it would drain the mines for them without expense. Mr. Sunderland was one of those men who would not sign this contract. They said—

"Oh, Sutro will build it, and when done it will drain our mines as well as others, and we shall get the benefit for nothing."

It was necessary to compel them to make a fair contribution, as I will show by a very familiar example. When a number of property owners on a street want to construct a sewer, and one man stays out and will take no part in the work, you must run the sewer by him or it would be useless, and if you run it by him he derives all the advantages from it for nothing. It would be an annoying and insurmountable difficulty. Hence, we find in all city charters authority for provisions making it compulsory on the inhabitants to pay their proportion towards sewers. It is absolutely necessary that they should contribute to such works. (a) We have practically the same principle and the same thing to contend with in mining; and I say now, that the time will come when Congress will pass a general law, such as they had in Spain and Germany, to compel mining companies to pay in cases of this kind. Tunnels are necessary for mining; (b) and it is a great mistake for the Government to grant to any man an absolute title to a mine. The Government should reserve for itself such privileges as are required in the development of our mining interests, the right to make certain regulations. (c) I do not know but that there is a clause in the present law partly covering this very point. There are such laws in Europe. I simply refer to these facts as significant from the principle embodied. It has been the experience in Mexico, in Spain, in Hungary, and in other countries where mining is prosecuted to a considerable extent, that miners never

(a) See Test., p. 372. (b) See Test., p. 606. (c) See Test., p. 602.

agree upon such questions, but that they take out all the ore that they can get any money from, and when the mines are gouged out it is impossible to find any one to make a tunnel.

THE UNDERTAKING PRESENTED AT NEW YORK.

After the act of incorporation passed Congress, I thought this matter stood on a basis that was not susceptible of doubt, and proceeding directly to New York from Washington, I published a little pamphlet, in which I explained the advantages of the tunnel and the probable income that would be derived from it. The people with whom I came in contact at that time (and they were some of the wealthiest and most intelligent of the residents of New York) took a great deal of interest in the tunnel, although somehow they regarded it as a vast undertaking, the accomplishment of which would be very remote. My assertions that the income from operating would amount to several millions per annum made them incredulous, and they argued that if that were true, I could easily raise the money in California. Many of the prominent merchants, bankers, and capitalists of New York, however, united in subscribing to a communication to me in which they promised that, if I would go back to the Pacific coast and raise three or four or five hundred thousand dollars, they would get \$3,000,000 for me in the east. (a) In the fall of 1866, therefore, I returned to California, and submitted the proposition to the mining companies. They were then in a pretty good condition. They were prosperous in business, and I found ready listeners when I demonstrated the importance of the tunnel to mining operations. I proposed to them to become interested in the tunnel. I showed them that they could come in at such a rate that it would be highly advantageous to them, for although they would be independent as mining concerns, they would still be owners in the tunnel enterprise, and it would re-

(a) See Commissioners' Report, p. 53.

turn them, by way of profit, all they would have to pay to it in royalty for the ores removed when in bonanza; while, on the other hand, when out of ore, without contributing a single dollar, the dividends from the tunnel would furnish them the means for prospecting. And they saw it, and recognized the fact. They began to subscribe, and in May, 1867, I think, I had \$600,000 subscribed. A great many private people put down their names for \$5,000, or \$10,000, or \$20,000 each, and I had a fair prospect of raising \$1,000,000 in San Francisco, and the whole amount required, perhaps, in California.

OPPOSITION BY THE BANK OF CALIFORNIA COMMENCED. (a)

Then it was that the Bank of California stepped in and concluded to break up the tunnel enterprise. But previous to that time I had again visited the Nevada Legislature, in February, 1867, I think, and asked the members to memorialize Congress. (b) I told them that this was an important question, not only to the State of Nevada, but to the whole country; and they responded to my wishes, urging Congress in the strongest terms to aid this work. They gave their reasons. (c) They showed the politico-economical demands for it. They demonstrated what influence it would have on the payment of the national debt. I should very much like to quote from the memorial, but it would take me too long.

When the California bank people observed the action the Legislature of Nevada had taken, with the conclusive logic of their address, they began to understand the probability that the Government would take some steps to assist in the construction of the tunnel. The Bank of California now came to the conclusion that it was a great enterprise, and, thinking we were about to get a subsidy from the United States, they set out to break it up. The Bank of California rules and runs that country. They owned al-

(a) See Test., pp. 17, 18, 166, 355, 356. (b) See book on Sutro Tunnel, p. xiii.

(c) See book on Sutro Tunnel, p. 77.

most everybody in it, and anybody that refuses to bend the knee to them they drive away. So they concluded to drive me away; and, in their unscrupulous manner of doing things, they began by making the mining companies repudiate their subscriptions. That was the first step they took. I had worked at this undertaking then for several years. I had induced some of my friends to invest some money in it: my means were limited. There were large expenses connected with the enterprise, in the way of making surveys and maps, traveling, arranging contracts, and employing lawyers. The bank, as soon as they had concluded to repudiate, declared that we had not complied with the conditions of our contracts.

THE QUESTION OF CONTRACTS.

That was in June, 1867. The contracts were made in the year 1866, and we agreed in those contracts that we would raise a certain sum of money by the 1st of August, 1867. Now, understand, in May, 1867, three months before our time expired, they commenced their opposition, and said we had not complied with our contracts. I had, however, taken the precaution to receive an extension from the mining companies of another year, and consequently our contracts ran until August 1, 1868.

In order that the circumstances may be thoroughly comprehended, I will refer to a single company, the reports of which I have in my possession. It is the Savage Mining Company, of which Alpheus Bull, Esq., is president—a gentleman who is connected with a great many companies out there, and who is supposed to be a very good man, a first-rate man, a very pious man, in fact; but in my opinion a great scamp, and a mere tool of the Bank of California. This is what he wrote in his official report on July 10, 1866, after the contracts had been made:

“The importance of affording drainage at a great depth, if it can possibly be obtained, cannot be too highly estimated. The Sutro Tunnel Company is the only party that proposes to undertake this important enterprise, and your trustees have entered into a contract with that company, for the purpose of effecting this great object. It is much to be desired that success may attend

the effort, for it is, in my opinion, a work upon which depends the future value and profitable working of the mines of the Comstock lode. I recommend that this contract be ratified by the stockholders at their present meeting." (a)

They did ratify it. That was in 1866. There was no opposition then. Now, let us see what he says—this same man—in 1867; and a very smooth-talking fellow he is, too. Recollect, now, these contracts did not expire till the 1st of August, 1867, with an extension of time made until August 1, 1868. There was an extension from this particular company, the Savage company, which I might as well read right here, now that I am about it, so that it may be put upon the record, and that there may be no question about the extension granted by that company at all:

"Resolved, That the president and secretary be, and are hereby, instructed to enter into the following contract with the Sutro Tunnel Company:

"This agreement, made this seventh day of March, A. D. 1867, between the Savage Mining Company, a corporation duly organized under the laws of the State of California, and having its mine on the Comstock lode, in the State of Nevada, party of the first part, and the Sutro Tunnel Company, party of the second part:

"Witnesseth, That in consideration of one dollar in gold coin of the United States in hand paid to the said party of the first part by the said party of the second part, and of other good and valuable considerations, receipt whereof is hereby acknowledged, said party of the first part agrees and covenants that the said party of the second part shall have, and is hereby granted, an extension of time for one year, from and after the period specified in articles first, third, fourth, and fifth, of a certain contract entered into between the parties hereto, on the thirtieth day of March, A. D. 1866."

[Recollect this gives an extension till the 1st of August, 1868.]

— "And it is hereby declared to be the intention of said grant of extension of time, that the operation and effect thereof shall be the same in all respects as if the 1st day of August, 1868, had been originally inserted in said contract, instead of the first day of August, 1867, wherever the date last mentioned is found therein.

"In testimony whereof the Savage Mining Company has caused these presents to be signed by the president and secretary, and its corporate seal to be hereto affixed, this seventh day of March, A. D. 1867.

"(Signed)

ALPHEUS BULL, *Pres't.*

"E. B. HOLMES, *Sec'y Savage Mining Co.*"

Now let us see what this man said that same year, on the 18th of July, 1867, before the *original* contract expired:

"On the the 26th of April, 1867, the board of trustees entered into an agreement with the Sutro Tunnel Company to subscribe \$150,000 towards the construction of the proposed drain tunnel, upon two conditions: first, that the tunnel company were to procure *bona fide* subscriptions to the amount

(a) See official report of Savage Company for 1866.

of \$3,000,000; and, second, that the agreement should be submitted to this annual meeting and ratified by the stockholders. *The tunnel company have failed to fulfill the first condition.*"

He said we had failed to fulfill the condition that we were to get \$3,000,000 in *bona fide* subscriptions, and our time had not yet expired. It was before the original contract expired, and a year and over before the extension expired.

Then he goes on to say:

"In addition to this, I consider there are grave reasons for doubting the policy of such an agreement on the part of this company. Suffice to say that I recommend the stockholders to refuse to give their approval to the agreement." (a)

This Bull was the tool of a ring, which had then been formed by the Bank of California, and they thought they could explode the tunnel project. It was next to impossible to obtain redress. You could not do anything in any court of law. It was reported that they could manage almost every judge in that part of the country, and that they had vast influence with all the newspapers. They thought they could ride rough-shod over my rights, but I did not let them do it, nor do I think I ever shall. I hold in my hand the paper, dated April 26, 1867, in which the Savage company agreed to pay \$150,000 to the tunnel company, yet that man had the assurance, three months later, to say we had not complied with the conditions of our contract, when we had a year and over to do it in.

RING RASCALITIES.

They put their heads together then, and said:

"Let us break up the Sutro tunnel. We will get hold of it in a year or two anyhow; and in the meantime we will make the mining companies give the money subscribed to the tunnel company towards a railroad, which we will build and own, and that will kill Sutro, and he will not be able to get the money he wants."

As a result of what I have just stated, in April, 1868, this man Bull wrote in the official report of the company:

"I am so strongly impressed with the importance of the early construction of this railway, and the great benefits it would confer upon this company, that I earnestly recommend to the stockholders the repeal or amendment of

(a) See official report of Savage Company for 1867.

the 4th article of the by-laws, so as to enable the in-coming board of trustees, if in their judgment they deem it advisable, to increase the subsidy of this company to the railway enterprise by an additional sum of fifty thousand dollars.

"With this road constructed and in operation, and with a *deep-drain tunnel which in a few years will be run*, and with a further saving in the reduction of ore, and also to increase the returns of the assay value of them from 65 per cent., the present standard, to 80 or 85 per cent., it is reasonable to believe, with all these advantages secured, we can transmit the danger of profits from silver mining at Virginia and Gold Hill to another generation." (a)

Now, if that record will not damn any set of men, I would like to know what will. There is falsehood proven on them out of their own mouths.

To recapitulate, then, you find that on April 3, 1866, this man Bull, as president of the Savage company, makes a contract with the Sutro Tunnel Company, and recommends its confirmation at the annual stockholders' meeting in July of that year, which was duly made.

On the 7th of March, 1867, following, he extends the time for the fulfillment of that contract until August 1, 1868. On the 26th of April, of that same year, (1867,) the board of trustees of the Savage company, through him, (Bull, their president,) subscribed \$150,000 to the Sutro Tunnel Company; and on the 18th of July, of that same year, he repudiates it all.

The California Bank ring saw the tunnel was going ahead, and while they wanted to break it up, they at the same time wanted to appropriate the money subscribed by the mining companies to themselves; and, in order to accomplish that, they got up this railroad enterprise.

Thus we find this same man Bull, in his next annual report in 1868, recommending the subscription of this identical sum of \$150,000 to the railroad company, which he had repudiated the year before, as far as the tunnel company was concerned; and so confident was he that the tunnel project was killed for good, that he lets out their plans for the future, by saying *that a deep tunnel would be constructed before long*—of course meaning by the bank ring. He thought it was killed off; his indecent haste was

(a) See official report of Savage Company for 1868.

so great that he called in the undertaker before the child was dead.

THEY WANT TO APPROPRIATE AID FROM THE GOVERNMENT TO THEMSELVES.

They now turned around, and their persecution fairly commenced. They thought the tunnel was a good thing, having read my pamphlets. They had not had brains enough to see it in the beginning; but when they did see it, notwithstanding our rights, obtained from the United States Government, they thought they would break it up: after the Nevada Legislature had shown that the Government of the United States was interested in that enterprise more intimately than in any other in the country, and they concluded to appropriate any aid from the federal Government to themselves. There you have the Bank of California. That is the way they do things out there. They thought in a few years I would be entirely used up, for I had no money to fight these people with, and they had millions, and were making millions out of these mines every year, fleecing the people, as I shall show further on. I charge them with these things, and I am ready to prove them.

THE RING HAS NO MONEY INVESTED IN THE RAILROAD.

What does Mr. Sunderland say in his argument? He says this tunnel ought not to receive any aid from the Government, because it would ruin their railroad. Why, that is no objection. They got the money subscribed to themselves away from us, and with it built that railroad in opposition to the tunnel. They built it several years after I obtained my rights. They designed that it should break up the tunnel. They tried to make people believe that, when the railroad should be made, they could bring wood on it so cheap, that they would be enabled to use it for pumping water out of the mines cheaper than it would run out by itself, and the people had no interest to differ from them. One

of Mr. Sunderland's reasons against the tunnel is, that the railroad cost \$3,000,000. The truth is, it only cost \$1,500,000. According to his own statement, they got from the mining companies----- \$800,000
 And a gift from three counties of----- 575,000
 Making a total of----- \$1,375,000

So there is not much of their money in it.

The railroad may cost \$3,000,000, if they build it to Reno, which would make it more than double its present length.

Mr. WALDRON. What is its present length?

Mr. SUTRO. Twenty-three miles from Virginia to Carson.

Now, I want to call attention to the fact, that more than one half of that railroad never will be injured at all. There are only ten miles that the tunnel could hurt, and I pretend to say that even that ten miles would not become entirely useless, and that Virginia City will continue to exist to a very considerable extent. He says these mining companies have paid \$800,000 already, and they ought not to pay anything towards this tunnel. So far as I am concerned, I can neither see sense nor philosophy in that argument. He says, also, that if we had complied with our contract there would not have been any necessity for making this railroad. I have shown that these people have *prevented* us from complying with the contracts. Their own statements show it. They are full of discrepancies. They say they wanted us to complete the tunnel, and they threw all sorts of obstacles in our way.

NO RUIN TO ANYTHING.

Mr. Sunderland next says that, if made, the tunnel will ruin Virginia City and Gold Hill. It has been stated here that the property there is worth \$5,000,000 or \$6,000,000; but in any mining town everybody knows that mining will some day cease, particularly if operations continue to be carried on as they are in those mines, and property will be worth but very little. I think the tunnel will injure

Virginia City and Gold Hill some, and I think it will injure ten miles of that railroad, but not much, for they can take up their rails and lay them to the mouth of the tunnel, and I prophesy that a large city will spring into existence there. Five years hence we shall see, perhaps, 50,000 people gathered near its mouth. Where they have two or three thousand miners employed now, they will then have 15,000; and the few thousand who will then remain at Virginia City will find plenty of employment in surface digging, for there will be more or less of mining operations conducted independent of the tunnel. It will take a long time to complete the ramifications from the tunnel—fifty years, I do not doubt. In the course of time we shall have in the argentiferous depths of those hills a hundred miles of tunnel—nay, two hundred. That which we seek to start to-day is the main artery, as it were. We go in four miles, and we will have tunnels branching from us in every direction; we will have a subterranean world, with avenues and rock-paved streets, an interminable traffic of cars, loaded with men, ore, and material. (a) There will be a business in this underground world such as no one can have any conception of. The whole mountain will be explored, and everything connected with mining cheapened; and the objection that Virginia City and Gold Hill will be injured falls to the ground; it amounts to nothing. (b)

Mr. Sunderland has also stated that the mills of the Carson river will be injured. There has been a great deal said here about making a large dam near the mouth of the tunnel; but we do not propose to make that dam. That is a dam proposed by the commissioners. They thought a dam would be a profitable investment, and that may be probably so; but in none of my pamphlets or books have I ever proposed making one. There is no necessity for it at all, as I will show when I reach that subject.

He has told us, furthermore, there will be \$13,000,000 or \$14,000,000 worth of property destroyed; that is to say,

(a) See Test., p. 27. (b) See Test., pp. 185, 186.

in property at Virginia City, the mills on the Carson, and this railroad; but I assert (the mills not being affected at all) that the loss will not exceed \$1,000,000. And they are going to get a benefit from the tunnel of more than \$10,000,000 a year. The yield of those mines will be so immense, that the people there cannot help growing rich from them. But Mr. Sunderland says every one will be bankrupted. The solution of the enigma is, the Bank of California is still bent upon breaking up our project, although we are now in a condition to push our work ahead. We have 300 or 400 men at work there at present, and we are going to construct that tunnel in spite of all their machinations.

RETURN TO NEW YORK.

After I saw the power the Bank had out there, I concluded it would be of no use for me to go on there any longer to try to accomplish anything. I perceived that nearly everybody was shunning me, as long as it was patent that the Bank was against me, and I could not raise a cent. Men of business were all afraid of the institution. Most of them were more or less in want of accommodations, and have business ramifications which leave them at the mercy of a great, unscrupulous moneyed concern, either directly or indirectly, so that they may be broken and ruined any day, and no redress could be had; and when I would relate the facts people would not believe me, and I could get no satisfaction. I therefore concluded to return to New York, where the people had told me, "You go and raise three or four hundred thousand dollars." Upon my arrival I showed the documents, in which the mining companies and others had subscribed \$600,000. I told them why they withdrew, but I could not explain that away; no matter what I might have said, they would not have believed it. I did not know what to do about this matter. I was not going to give it up, because I had said I would carry it out, and I was more determined than ever not to give it up

under any circumstances. I thought to myself, "I have that indorsement from the Nevada Legislature; I will explain it to Congress, and submit it there, and let them know what this Bank of California is; what a set of scamps they are, and how they had acted towards me, in what bad faith; how they had perverted facts, and done everything to break up the enterprise; and I will submit this report of the Nevada Legislature, which, I repeat, is a most conclusive argument for Government aiding this work, and developing the vast mineral resources of the country."

Soon after I arrived at New York, I went in one day to Leese & Waller's, the agents of the Bank of California, though I knew they would be against me, and I found a placard posted up, saying that the Savage company had repudiated the subscription to the tunnel company, and that the same was null and void. I was astonished to find in a banking office in New York a placard like that. Everybody from the Pacific coast would come in and read it, and would think I had committed some crime, or been guilty of some rascality. I saw what they were up to. They wanted to ruin me in New York, so I could get no money there. (a)

TRIP TO EUROPE.

I concluded to go to Europe and try to raise some funds there, and at the same time post myself on mining. I was familiar with the great works on mining written by the scientific men in Europe, who had spent a lifetime in studying what had been experienced by others during centuries, and some of whom had traveled all over the world to get experience themselves, and I wanted to come in contact with those people and consult with them. I also wanted to visit the mines there myself, and study the continuance of mineral lodes in depth. I met such men as Von Beust, (b) Sir Roderick Murchison, (c) Von Cotta, (d)

(a) See Commissioners' Report, p. 55.

(b) See Test., pp. 607, 608.

(c) See Test., p. 614.

(d) See Test., pp. 608, 609, 610.

Weissbach, (a) Kerl, (b) Rivot, (c) Chevalier, and many others, the great scientific celebrities of the world. Their books are used in many schools and universities. They all indorsed this project. Some of their letters are published in my book, (d) in which they compliment me on this magnificent undertaking: the greatest undertaking, they thought, going on in America. They indorsed it heartily, these men, thoroughly familiar with mining science. Baron Richthofen, a celebrated geologist, had some time previous written a treatise about the geology of the Comstock lode, (e) and in regard to this tunnel, which he recommended highly. They saw the benefits of the tunnel at a glance. They understood its whole effect. They knew by their own experiences what it would be.

CAPITALISTS ALARMED.

While I was in Europe I made some inquiries as to what I could do in the way of raising money there. I had a great many letters of introduction. I have read one from Mr. Ralston, which I never used. I had letters of introduction from many of the bankers and prominent people in California to leading people in London, Paris, Frankfort, Amsterdam, and Berlin. They thought the tunnel was a magnificent work; but a work of that kind is difficult to carry out, and still more difficult to raise money for. When a capitalist lends money, he wants to have the returns in hand before he lets it go. You know how difficult it is to do anything with such people; but the great obstacle in 1867, about the time the Exposition was going on in Paris, was a feeling all over Europe, in diplomatic and financial circles, that there was going to be a war between Prussia and France. Everybody knew it was coming, and the bourse, which is the most sensitive barometer there is in the world, as far as money is concerned, felt it; and everybody in London told me that nothing could be done with American enterprises, either railroads or tun-

(a) See Test., p. 614.

(b) See Test., p. 613.

(c) See Test., p. 613.

(d) See book on Sutro Tunnel, pp. 33-74.

(e) See book on Sutro Tunnel, p. 95.

nels, or anything else, because war was bound to come. It did not come for two years afterwards, but it did come. At that time, however, it made the impression I am picturing. There was a perfect plethora of money in England. It was lending at one per cent. a year. "If that is so," said I to them, "you ought to be glad to make a good investment." "No," they replied, "the reason money is so low is because people are afraid to invest it in anything." They would rather let it lay in the banks. But when there is confidence they are ready to invest, and it comes up to four and five per cent. a year. That I did not know then, but I am quite sure I know it now.

EFFORTS IN THE FORTIETH CONGRESS.

About the close of 1867 I returned to Washington. I think I left Liverpool on the 1st of December, 1867. I submitted the memorial of the Nevada Legislature to Congress, which was referred to the Committee on Mines and Mining, of which, at that time, Mr. Higby of California was chairman; the other members were Judge Woodward of Pennsylvania, Mr. Ashley of Nevada, J. Proctor Knott of Kentucky, M. C. Hunter of Indiana, Judge Ferris of New York, Mr. Mallory of Oregon, General Ashley of Ohio, Mr. Driggs of Michigan. They became deeply interested in this question; they often met twice a week, nearly every member present. They would meet at that same room where the Mining Committee meets now, every Monday or Wednesday, and I would talk to them about mining. I went into all the details of mining; explained it all to them; and they became deeply interested in it, so much so, that they were anxious for me to come before them and talk about everything connected with mining, independently of this tunnel question. I became acquainted with nearly all the members of the House, and I found a great many friends. After this lengthy examination of the subject they made an able report to the House, recommending a loan of

\$5,000,000, with a mortgage to the Government on all the property. (a)

IMPEACHMENT OF PRESIDENT JOHNSON.

Just then, when the committee was about to be called in the House, the impeachment of Andrew Johnson commenced, and that lasted for months. During that time nothing was done by Congress; they kept on with their meetings in the Mining Committee, but nothing was done in the House. I do truly believe, from my acquaintance with the opinions of members of that House, that that bill would have passed with a three-quarters or five-sixths vote could it only have been reached. There was Thad. Stevens: the old man felt a great interest in this question of getting down deeper into the bowels of the earth than had ever been reached before in the world. I explained it to the old man when he was sick, and sat by him many times when he was in bed. He would have my book with him in bed, and kept reading it. He said it was a magnificent project. I explained to him that during thousands of years man had never penetrated to a greater depth than 2,700 feet, and that we should go down a mile, and see what was there. Well, Thaddeus Stevens was ready to do anything for it; but Congress adjourned, and the old man died, and I went home again, after exhausting all my powers, almost despairing, and being under large expense, and that Bank of California quietly and secretly fighting me, being in telegraphic communication with their agents at Washington all the time. (b) Many members of Congress promised that next winter they would certainly act in this matter. But I had accomplished nothing, and returned to California again. I remained a few months on that side, and then came back to Washington during the

SESSION OF 1868-'69.

I remained here that winter. Grant had just been

(a) See H. R. No. 50, 2d Session 40th Congress.

(b) See Commissioners' Report, p. 56.

elected President, and you know; gentlemen, that at that session there was no disposition to undertake any legislation. It was a short one, and the whole time was occupied in passing appropriation bills. In fact, while Johnson was at the head of the administration there was no disposition to do anything until after Grant should come in, so I went back to California once more, and kept up communication with financial men all the time; but it did not succeed in doing anything. In the summer of 1869 the Ways and Means Committee paid a visit to California. I saw them in San Francisco. Mr. Hooper of Boston was the acting chairman; Mr. Schenck, the chairman, having gone over to Europe. I saw the importance of getting those gentlemen over to Virginia City. They were a very influential committee; a committee composed of gentlemen of the highest standing, and I urged them all personally in San Francisco to go over to Virginia City.

VISIT OF THE WAYS AND MEANS COMMITTEE.

While they were in San Francisco of course they were more or less shown around by the Bank of California. They could not help that, because they are prominent people, and have ramifications among all the wealthy residents of the Pacific coast; in fact, they run things out there pretty much, and they entertained those gentlemen to some extent. I urged them very much to go to the mines on their return to the east. Well, they told me that they would certainly go; they promised me faithfully, every one of them, that they would; but the Bank people, who had heard, in the meantime, of the determination of the committee, said *they* would take them over. I told them "all right." It could not be helped. The Bank folks had them in charge. They for a long time endeavored to persuade them not to go, but when they saw they were determined upon making the trip, they concluded to take charge of the party. They came over to Virginia City, and they were the guests of Mr. Sharon; but they had promised to come and see me. I could not possibly call to see them,

being, as they were, in the house of my enemies. But they did come to see me at the hotel. They had meanwhile visited some of the mines and seen that I was correct. They were such thoroughly intelligent gentlemen, that they perceived at once that I had been representing things as they existed; and the very fact that this Bank of California was trying to injure me and denounce me made them the more earnest in my favor. Mr. Sharon told Governor Blair (and there is no more thoroughly honorable man than Mr. Blair in the United States) that they wanted to drive me out of the country. They didn't want the tunnel built. I showed them the lay of the country, and they came away most fully convinced of the justice of my case and the outrageous character of the persecution to which I was subjected. I think it was a very fortunate circumstance that these gentlemen came over there, because I thought it would secure to me at last a hearing in Congress. They became entirely satisfied that what I had stated in regard to this undertaking was correct; they went down into those mines in that terrible heat, and came near fainting in the attempt. Mr. Hooper of Boston, Judge Kelley of Pennsylvania, Mr. Maynard of Tennessee, Judge Marshall of Illinois, Governor Blair of Michigan, and Mr. Brooks of New York all went down into those mines. They saw it all; and if you ask any of those gentlemen about it, they will express but one opinion, every one of them.

SPEECH AT VIRGINIA CITY.

Well, I had now gone on some years in this affair. I was about getting crushed out by the bank. They were getting more and more bitter as the time passed, for they were annoyed at my persistence, which prevented them from starting the tunnel themselves. I had no chance to explain myself to the public. They owned all the newspapers, and they wouldn't print anything about the tunnel either for pay or otherwise, and I made up my mind to get up in Virginia City, right in their midst, show up

their rascalities, and explain the persecution they had instituted against me. I made a speech there, and that speech has been printed. (a) In it I made an appeal to the workingmen, the men who have to delve and toil in those mines with the thermometer at 100° and 110°: men who become consumptive working in that heated and foul atmosphere. I explained it all to them, and appealed to them that if each one would put in \$5 or \$10 apiece we could go on with the work and carry it out. Why, there was the greatest enthusiasm about this matter. They would not go to bed that night, but stood about the streets talking it over. They thought they could carry it out at once. The Miners' Union subscribed \$50,000 then. That helped to start the work going. These laboring miners did that. Of course they received an interest in the Tunnel company, and they put in this trifling amount of money. I told them that if they would go in together and put in \$5 a month apiece, they would own the tunnel in time and would own the mines. Mr. Sunderland has quoted me as saying that the Tunnel company would own the mines, but he has not stated in what connection the assertion was made. I did tell these people that they would and should own the mines. I told them to join together into a great co-operative association and build that tunnel. I told them they were spending \$5 a month apiece for whiskey; I said, "Put it in the tunnel." That, for 8,000 miners, would have been \$15,000 a month. If they would join together in this great work the politicians out there could not afford to oppose them. Well, they came and subscribed to the stock. They put in some money.

Mr. Sunderland has denounced that speech as the speech of a demagogue. He says I was inciting these men against the owners of these mines. These men were already bitter against this Bank of California; and I told them *not* to use any violence. I told them to go in and own this tunnel. Mr. Sunderland says that was the way to incite them to violence. I did not so understand it. (b)

(a) See Commissioners' Report, p. 48. (b) See Commissioners' Report, p. 48.

START WORK ON THE TUNNEL.

Well, we at last set to work on the 19th of October, 1869. We had raised some money over there and in California, and we started work. We had some festivities when we started. Many of the laboring men came down, and the officers of the laboring associations; but nobody from the Bank of California showed himself. They kept away at that time. We started the tunnel going on a small scale, for our means were limited; but we were acting under the rights given us by Congress.

We started in, and we simply made a beginning, it is true; but, having started, I thought we better incorporate as a company in San Francisco. This was in December, 1869. In the spring of 1870, while I was managing our financial affairs in California, raising more money to carry on the work, I received telegrams from Washington that I had better come on there right away; the bank had sent men there to get our franchise repealed. So I rushed off. I went overland, and came to Washington. What did I find? Why, that Mr. Fitch, our Representative from Nevada, had introduced a bill to repeal the third section of the law of Congress which secured us our royalty. That was the new dodge of the Bank of California to break us up. They had hired newspapers to abuse me. They abused me in the worst possible manner, and warned people from coming in with me; but the miners all understood it. They are laboring miners, who work in the bowels of the earth, and go down 1,000 or 1,200 feet, and bring out the rock. These men understood it all. They put in their money, and when the bank saw that we were going ahead, and running this tunnel in, with the chances of cutting a vein any day, they became alarmed, and hurried on to Washington to get this law repealed.

THE BANK ATTEMPTS TO REPEAL OUR FRANCHISE.

Mr. Hillyer, a prominent lawyer of Nevada, had been sent on, and tried to get that law repealed. Perhaps some

of you gentlemen recollect the fight that we had over that bill in the Fortieth Congress. Then my good fortune was that these gentlemen of the Ways and Means Committee had been over there and seen it all, and they stood by me. If they had not been over there, I should have been beaten. Mr. Blair stood up for me like a man. So did Judge Kelley. They all stood up for me. Those that did not make speeches went around and told the Representatives that this was a great outrage about to be perpetrated, and they protected my interests; and the members of the Mining Committee of that and the previous Congress all stood up for me. The Committee had made a unanimous report against the repeal, with the exception of Mr. Sargent. Judge Orange Ferris, a man as true as steel, was chairman, and had charge of the bill; he made a gallant fight, and was assisted by Mr. Strickland and all the other members of the Committee. Coming here in March, I had no time to see the new members of Congress, for the matter came up on the 17th of March, after I had just arrived here in Washington, and they had it all cooked up. They had had no bill printed, so that nobody should see what was being done. But I had it printed myself. I had some other documents printed which showed them up. Here is one of them. That bill was printed for the first time in this document. They had put that bill in writing, and being filed away amongst the Speaker's papers, it would have remained there until it passed, without my knowing anything about it, if my friends had not informed me, and if I had not come here. The vote upon the measure was 124 to 42. (a) General Banks doubtless recollects it. He voted against that bill to repeal our rights. After this bill had been defeated in Congress, I had to remain here to watch these people, because I knew they would try to steal in something or other, and get it through in an underhanded way. I asked to have a provision inserted in a general mining bill in the Senate, protecting my rights;

(a) See Congressional Globe, March 17, 22, and 23, 1870.

and Judge Trumbull, of Illinois, stood up for our rights, and showed that this sort of thing ought not to be allowed. So they protected me in my rights again.

WAR BETWEEN PRUSSIA AND FRANCE.

Then I commenced negotiations in Europe once more. I had a gentleman over there, an American, who had been out in Nevada, and he tried to raise this money in London. While he was doing that, he received a proposition from Paris and went over there, and made some preliminary arrangements to furnish us with 15,000,000 francs. That was in June, 1869. I was waiting for Congress to adjourn, and wanted to sail for Europe on the 20th of July. I had arranged to sail with Reverdy Johnson, of Baltimore, our former minister to England, who had agreed to go over to Europe to assist me. He was to sail with me on the 20th of July. He was at Baltimore, and I was here in Washington. I met him once in a while, and we talked the matter over. While he had been American minister to England he had made a great many friends over there, who I thought would probably assist me, not knowing for sure whether this 15,000,000 francs loan would be consummated. I thought I better have all the assistance I could get. I received letters from Reverdy Johnson while I was in correspondence with him on this subject, written in the early part of July, 1870, when this war cloud arose. He wrote me, about the 10th of July, it was no use to go over, and sure enough on the 15th of July, when I had reason to suppose I had secured all the money required, news came that war had broken out between France and Prussia. That broke up our negotiations. Not another word was said about it. You could not raise \$5 for any enterprise whatever in Europe or America. After all this fight in Congress; after showing the injustice of the movement against me, after this great victory, and believing the road to success clear now, when I was almost certain of getting the money required, the war broke out and spoiled all.

What was I to do? I couldn't raise one dollar in Europe or in the United States, so I returned

BACK TO NEVADA AGAIN.

We carried on our work all the time, struggling to get money to pay for it. We were paying \$4 a day to our miners, in 8 hours' shifts, that is \$3 in money, and \$1 in stock. We were using powder, tools, and timbers. We had to put up steam machinery, and I had to provide the funds or stop the work, and that I was determined should not happen. I tried to get along the best way I could, waiting the termination of that European war, intending to commence negotiations for money anew.

Of course that Paris matter was broken up forever as soon as that war commenced; but I thought I would probably be able in England, or other parts of Europe, to raise the money needed.

In December, 1870, I was back in Washington. I could do nothing in California, and I thought it probable I might induce Congress to do something in this matter. I had to come here to watch these people anyway, because I knew they would smuggle in something or other into a law to injure me if I did not. It was a most mortifying condition of affairs to me, to see some of the Representatives from the Pacific coast arrayed against me. They nearly all opposed me. They knew the Bank of California was the stronger, and so they helped the bank. I was the weaker, and they tried to kick me out. That is the way some of our Pacific coast politicians do. Right or wrong, you always find them on the strongest side, or the side which they expect will win. That is a fact, and I know it.

APPOINTMENT OF A COMMISSION.

I came back to Washington, I say, in December, 1870. It was another short session. I watched after these people. The agents of the bank kept up their misrepresentations, telling members that the tunnel was all a humbug; it was not necessary; that the mines had given out; that

there was no need for a tunnel. In the spring of 1871, in order to settle this affair at last, after all these years of labor and fighting and attempts to drive me away from this undertaking, I asked for a commission to go out there. I said to gentlemen in the House and Senate, "Send a commission out there, and let them report upon this question, and let them see what there is of it, and whether I have been telling the truth or not;" and a bill to do this passed both branches, and the President signed it on the 4th of April of last year. I thought that would settle the question for good. Gentlemen of the highest character would be sent out to investigate this subject, and there would be no more caviling about it. It would stop the misrepresentations of the bank, because we would get these commissioners to go there and examine into all the facts. And the President appointed Major General H. G. Wright, (and a more honorable gentleman never lived; a high-toned, excellent man;) Major General John G. Foster; and Professor W. Newcomb, (a gentleman of scientific attainments and straightforward, honorable character.) These commissioners saw as soon as they were appointed what there was about this; they saw that the Bank of California was against me. They saw there had been a great fight. They became rather timid. They did not know precisely what course to pursue. They saw they might get placed in a false position. They would not say much to me after I arrived out there to meet them. We were all very friendly, but the bank made desperate efforts to impress them their own way. I saw that they would be, to a large extent, under the guidance of these bank people, of the superintendents of the mines, some of whom are very much under the thumb of this bank, which regulates matters over there; and I perceived the danger that they might not get at the whole truth. They were very cautious, I must say, and careful, and I thought they would try to get at the facts; and no one who has listened to the testimony, particularly of General Wright or Professor Newcomb, can help thinking that they are men of the highest truth and character. They

made straightforward answers to whatever questions were asked them.

EXAMINATION OF THE MINES BY THE COMMISSIONERS.

Well, these gentlemen remained some time over there in Nevada. They visited the mines under the guidance of the superintendents, (a) and there are probably 200 miles of drifts in those mines. Why, I can take you in those mines and give you half a dozen views of the whole matter. You would not know the difference. (b) You cannot see the water in the mines. There is a sump (c) covered over, way down, that they pump out of. They might take you into comparatively cool drifts, where the ventilation is good; but these gentlemen found the thermometer was 110° in some places, notwithstanding.

They went down to the mouth of the tunnel several times. They went down there and saw it, and took great care in examining it; but, surrounded as they were by the satellites of the bank, who were straining every nerve to impress them against the tunnel, it is a marvel they did as well understand the matter. This man Sharon told them the first time he met them that he was going to break up this tunnel. (d) During the examination, I asked General Wright whether he thought Mr. Sharon would set aside a law of Congress, and he said certainly he thought he would; he was going to break up the tunnel if he could. These bank people come here to run Congress. They would like to run this Government; and what I want to find out is, whether they are going to run this Government or whether Congress is. They have been running the legislature out there, I know. I do not think they can succeed quite as well here.

ANOTHER TRIP TO EUROPE.

While these commissioners were out there, some gentlemen arrived there having connections in England—the

(a) See Test., pp. 167, 182.

(b) See Test., p. 183.

(c) See Test., pp. 183, 184.

(d) See Test., pp. 164, 165, 177, 355, 356.

same parties that had been negotiating for me before over the water—and I showed them the whole of this affair again, and they investigated it and set out for Europe; and, while I was still in Nevada, I received dispatches from them, that probably they could arrange some financial matters for me over there. So I remained in Nevada until the 15th of August. The commission was still there at that time. I then started for New York, and on the 30th of August I sailed for Europe. I came to London, and in a few days arranged for \$650,000 in gold coin. I remained there a few days, and went to Paris. That was this last year. I went to Paris, and then came right back to the United States, within thirty days from the time I had left New York; and from New York I proceeded directly to California and to Nevada. Having the means now to start the work on a large scale, we set all the shafts going, buying all the necessary machinery, and employing all the people that were necessary; and our whole works have been in full progress since last December. We are working day and night, and we have some 300 or 400 men employed. We are pushing the work ahead just as fast as we can; (a) and I believe in two or three years the whole tunnel will be finished to the Comstock lode, provided we can secure the balance of the money. I will state that, since I came from Europe, we have made another arrangement over there for \$800,000 more, so that we have now \$1,450,000—a pretty good sum towards constructing that tunnel. It gives us a good start, and we do not owe a single dollar to anybody. If we get any loan through Congress, we can give the Government a clear first mortgage on all this vast property, entirely unincumbered, and with a million and a half of dollars already invested.

THE COMMISSIONERS' REPORT.

After we had everything in running order out there, I started back to Washington last January, but, being de-

(a) See Report of Superintendent of Sutro Tunnel for first quarter 1872.

layed on the way by a snow blockade in the Rocky Mountains, I came here rather late. When I arrived here, I found that the commissioners had sent in their report to Congress; and here there was another disappointment. I had begun to think I was entirely out of the woods, that there would be no more chance for misrepresentation now that these gentlemen had been out there, who, I had been led to believe, would give the most complete and exhaustive statements in regard to the mines and tunnel. I was very much disappointed in regard to the lack of information about several important facts. Certainly a great many other points are stated by the commissioners which are conceded to be absolutely correct.

They state that the tunnel is entirely feasible. (a) (Well, really nobody ever doubted that except the California Bank people, who said the tunnel could not be made.)

They give the cost of the work at \$4,500,000. (b) They state that it could be completed in three or four years; by machinery in two years and a half. (c)

They also state in their report that the yield of the Comstock mines heretofore had been \$125,000,000, and that the present yield is \$15,000,000 per annum. (d) These latter facts they ascertained from the published reports and from the books. There is no question about those points. Nobody doubts them at all; they are patent to everybody that lives out there.

Then, furthermore, they declare the Comstock lode to be a true fissure vein, reaching down into the earth indefinitely; (e) that those mines will be worked as deep as mechanical means will allow; and that the amount of low-grade ores in the lode, which cannot be taken out now on account of the expensive system of mining, is almost unlimited in extent; that that class of ores which is abso-

(a) See Test., pp. 314, 321, 322, 323; also Commissioners' Report, p. 13.

(b) See Commissioners' Report, p. 14.

(c) See Commissioners' Report, p. 14.

(d) See Commissioners' Report, p. 15.

(e) See Commissioners' Report, p. 15.

lutely known to remain in the mines is immense. (a) There is no theoretical conclusion about that. That ore they ascertained to exist, and conclude that it has almost no limit.

IN WHAT THE COMMISSIONERS WERE MISLED.

They also state that there would be two important veins cut in running the tunnel in. (b) On all these points the commissioners are perfectly clear. Those are all points which they could either ascertain from their own observation or from records and authentic statements which have been published. They are able engineers, and their calculation upon the cost is also as reliable as the nature of the work will allow. They evidently tried to arrive at a fair conclusion in that respect.

But now let us come to that part of the report which, from the manner it was arrived at, must prove very unsatisfactory indeed. When they came to the important points of drainage, transportation, and concentration, what did they do? Why, they addressed a note to the superintendents of those mines, the employés of the Bank of California, and asked them to answer certain questions. The important part of their report they proposed to base upon the evidence furnished by the superintendents. (c) They were to tell them how much water there was in those mines. They were to tell them what facilities there were for working those mines, and what they thought of the Sutro tunnel; and they readily answered all these questions, and the commissioners, taking those reports, gave their figures on the basis furnished thereby. (d) What reliance can be placed upon these deductions, when we know that most of the superintendents are the sworn enemies of the enterprise? The commissioners' comparative cost of working by means of the tunnel, and the way they are doing it now, is certainly erroneous. These people were all interested. Their

(a) See Commissioners' Report, p. 20.

(b) See Test., pp. 151, 152, 205, 215, 286, 287, 429, 430.

(c) See Commissioners' Report, p. 8; also Test., pp. 2, 3, 4, 14, 15, 97, 201, 228, 307, 329, 374.

(d) See Test., pp. 2, 3, 4, 14, 15, 97, 201, 228, 307, 329, 374.

profits depend upon carrying on these mining and milling operations as they are carried on now. They are all getting rich and fat on them at the expense of the stockholders. They are wealthy. They want to maintain the present state of things. There are manipulations going on there which it is not for the interest of the country to have go on. These commissioners are old army officers. They are not quite up to the rascalities of that bank ring out there; not quite up to these stock-jobbing operations. They took many things for granted which these men told them; took it all for gospel; thought it was all just so. They were not sharp enough for them at all. Reading their report, it must strike you that they rather tried not to offend either side. They did not make any positive report. They were deceived to some extent by those people out there. There is no question about that.

EXAMINATION OF THE COMMISSIONERS.

It appeared to me absolutely necessary, in order to arrive at all the facts and set matters right, to request the chairman of the Mining Committee to ask that these gentlemen be cited before the committee, and the Secretary of War was asked to have them ordered to Washington. So they arrived; they testified; and we have the result in 810 pages of printed matter, making the case as clear as you can make any case in the world. It shows everything. We did not leave a stone unturned to show up every point. Some of the gentlemen of the committee must have become tired and weary. It was rather an imposition to ask the members of the committee to come to twenty-five hearings, night after night, although it was probably somewhat interesting to them. There are a great many scientific facts brought out in the evidence. It is a valuable book on mining, a great deal more so than a great many other books printed by Congress; and that book is a complete confirmation of everything that I have said and written on the tunnel for the last eight years. Every statement I have made is borne out there by these witnesses.

THE TESTIMONY MAKES A CONCLUSIVE CASE.

I am glad to be able to submit the whole case upon this testimony, and, taking it altogether, it is a most conclusive argument upon the importance of that tunnel. I cannot ask members of Congress to read the whole of that volume, but I suppose they can some day look it over and draw their own conclusions. We went along, and the three commissioners were examined; and, by the by, they were all cross-examined by the attorney of the Bank of California, Mr. Sunderland, sent here from the Pacific coast to get out all the damaging facts he possibly could. He brought out everything he could, but he did not bring out one single fact that goes against the tunnel in that whole examination. After the commissioners had been examined, the bank party became alarmed. They saw that they were gone up; that they had no case; and Mr. Sunderland telegraphed to Nevada for two of those superintendents, who had made statements to the commissioners, to come on here, in order to set themselves right. He appealed to the committee, and told them that he must have those people here; that their veracity had been attacked. Well, we consented to it, and he insisted on examining six more witnesses; and we asked the same privilege. Then the committee passed a resolution that there should be six more witnesses examined on each side; that there should be no more than eight hearings; and that the whole testimony should be closed by the 1st of April. Well, the Bank of California sent Mr. Requa, the superintendent of the Chollar Potosi mine, and Mr. Batterman, and they were going to annihilate all the previous testimony. (a) The first question I asked both of them was whether they were mining engineers. (b) No; never had any experience on any mines excepting those on the Comstock lode. They were glad to get away from us. I asked them who sent them here, and they had to admit that they were sent by Mr. Sharon, the

(a) See Test., pp. 549, 550, 575. (b) See Test., pp. 104, 462, 463, 504, 681.

agent of the Bank of California; and they were glad to get off when we let them. They were in tight quarters. I had Mr. Requa tell how much profit the Chollar Potosi company had paid to the Union Mill and Mining Company (which is owned by the Bank of California) in one year. \$376,000. He had to tell all about that. That is their kind of operations. They paid them over \$1,000,000 for working in one single year, and the clear profit paid to the Bank of California out of that sum was \$376,000. (a)

TESTIMONY OF PROFESSOR RAYMOND AND MR. LUCKHARDT.

The committee thought, since there was more testimony to be heard on this subject, they had better cite Mr. Raymond, the United States Commissioner on Mines and Mining, (b) and hear what he had to say on this question. Mr. Raymond came here at the request of the Secretary of the Treasury. Now, here we had a distinguished mining engineer before the committee, a man of intelligence, a student of Freiberg, a man who had visited nearly all the mines of Europe and in this country, who is president of the American Institute of Mining Engineers. Here was valuable testimony. The evidence in favor of the tunnel became stronger and stronger.

Then we examined Mr. Luckhardt, (c) who was employed by the Bank of California (d) for five years to make reports, so as to furnish them with secret information which the public could not get. Luckhardt's testimony is most conclusive, so is Mr. Raymond's. They are scientific men, and they showed the facts. It was about as complete an investigation, I believe, on a single subject, as has ever taken place in Congress, and I do hope that members will take time to read that book or devote a few hours to it.

There is an index attached, and part of it will be found quite interesting. The testimony of Luckhardt and Ray-

(a) See Test., p. 520.

(b) See Test., pp. 597, 598.

(c) See Test., pp. 677, 678.

(d) See Test., pp. 678, 679, 680, 681, 682, 722, 723.

mond is highly valuable. It will be looked upon as a valuable acquisition to mining literature. As I have said, that evidence is a complete confirmation of my statements on the subject of the tunnel during the last eight years. These Government witnesses have indorsed them. Your commissioners have set themselves right on every question by their testimony, and nearly everything has been finally established.

CORRECTNESS OF STATEMENTS ATTACKED.

Mr. Sunderland, in his argument, has tried to create the impression that some of my statements are incorrect. He says I have stated in one of my pamphlets that the tunnel will cost \$1,950,000; and that the revenue, during its construction, would be \$500,000; consequently, all the money required would be \$1,450,000. Now, gentlemen know how difficult it is to make an estimate for a work of that kind. You have an illustration of that in the Hoosac tunnel, in Massachusetts. They thought it would only cost \$2,000,000, but it has cost much more. The \$1,950,000 given in my pamphlet seven years ago was for the main tunnel only. Branches were not included in that; and those figures were given in gold. Then, Mr. Sunderland attacks the statement made by the committee of the 40th Congress. The committee stated that that tunnel would probably cost \$8,000,000. These gentlemen in Congress had reports on the Hoosac tunnel and every other tunnel. They made the figures by drawing comparisons between the costs of hundreds of tunnels in Europe, and they arrived at the conclusion that the whole work, with the branches, would probably cost \$8,000,000 in currency. We have now had a commission out there of very able engineers. There can be no question as to the high order of ability of both General Wright and General Foster as engineers. They have figured on it carefully, and they declare it will cost \$4,500,000. Now, Mr. Sunderland and these bank people have searched for years to bring out something against me and that tunnel enterprise, and

he has discovered that I said at one time the work would only cost about \$2,000,000, and that is about the most damaging fact he can discover.

TOTAL YIELD OF MEXICAN MINES.

He also says that I have stated in one of these books here that these mines on the Comstock produce nearly as much as the whole of Mexico, and that it has been shown in this examination that the mines of Mexico produce \$29,000,000, while the Comstock produced only \$18,000,000 in one year. That is another damaging fact, by which he wants to impeach my statements.

Now, the fact is, the mines of Mexico, between 1795 and 1810, when in their most prosperous condition, were yielding more money than they ever did at any one time before. They were yielding then, according to Humboldt, \$22,000,000 a year. In 1810, when the revolution took place, it dropped down to \$9,000,000 at once, and it went down as low as \$4,000,000, I think, for a number of years. (a) It rose from that to \$15,000,000 or \$16,000,000, until within the last few years, when, under the administration of Juarez, such an impetus was given to mining, that it came up last year, I believe, to \$29,000,000. That is one of the damaging facts Mr. Sunderland brings out in all this amount of testimony against my statements, which I claim now are as nearly correct as they could have been given with the information in my possession at that time.

Then he gives us some more figures here. He says I state in that book it costs \$4,000,000 a year to pump the water out of the Comstock. The commissioners say it costs \$124,000. I admit that the former is a large figure. But, supposing all that district be opened up, as it should be, to a depth of 2,000 feet, and all the mines connected, it would nearly cost that amount to pump the water out, counting all the machinery which would be required, and the wear and tear, and considering the great cost of machinery at

(a) See Humboldt's Political Essay on New Spain.

that time. Well, the commissioners put it at \$124,000. That was taken from the statements of these superintendents, the agents of the Bank of California. I will say now that it costs over \$1,000,000 at the present time, if you count the whole expense. If you get down 2,000 feet all along the lode, it will cost an enormous sum. They did not include any indirect cost in this report made to the Government, and that causes by far the greatest part of the cost of pumping.

PRESENT MANNER OF MINING.

We have shown, by the testimony of every one of those gentlemen, that these mines are worked for stock-jobbing. In order to explain myself, I will have to go into the mode of mining as it is carried on now. These mines are opened by means of shafts all along this lode. There is a shaft sunk down every 2,000 or 3,000 feet. There is large machinery on these shafts. (a) The water is pumped out by means of great steam engines from the bottom of these shafts, and the ore is hoisted out to the surface, and then carried on this railroad we have spoken of to the mills. In working mines in that way they open one level only at a time. It is immensely difficult sometimes to go down a single hundred feet in these shafts, and open up a new level, because the water which you encounter and the difficulties of pumping are very great. But they do not want to open up more than one level at a time, because they want to keep the condition of the mine in the dark.

STOCK-JOBGING OPERATIONS. (b)

I want to explain now how these manipulations are carried on. These mining companies are joint-stock companies, and they are used for speculation by the people who buy the stock, which is scattered all over the country. It is held on the street by brokers, and they speculate and operate

(a) See Test., pp. 32, 33, 34, 179, 203, 204, 213, 371, 607, 644, 648, 691.

(b) See Test., pp. 165, 168, 174, 178, 215, 278, 300, 301, 342, 343, 344, 466, 468, 601, 682, 683.

in these stocks for the sake of making money out of the rise, or they sell short to make money out of the decline. Consequently the mines are really owned by nobody. (a) Some mines, when they get in very fine condition, are bought up and looked after by the owners; but, as a general thing, they are owned by nobody, as far as legitimate mining is concerned. (b) Men dealing in these stocks do not find out whether the mines are worked to advantage or not.

The people engaged in this kind of operation are of a very speculative turn of mind. They invest \$1,000 in a certain stock, and when they think they see another chance they pawn that stock and get \$500 on it, and buy more, and then they pawn that again; and the Bank of California has started an agency at Virginia City, put a man in charge by the name of Sharon to manage the bank, and they play a very smart game there. They loan money on these shares. Everybody speculates, every miner, or chambermaid, or washerwoman; and as soon as they get into one stock they want to speculate in other stock, and they have to pawn it, and the Bank of California, a regular pawnbroker shop, loans money on them. (c) They have men throughout these mines who keep them informed. In fact, they employed Mr. Luckhardt for five years to furnish a daily report about the condition of the mines on the Comstock.

HOW TRUSTEES ARE ELECTED. (d)

Now, mark what these people do. When the election comes off, all this stock stands in the name of the Bank of California, because when they loan money on the stock it is transferred to them or to one of their clerks. They do not place it in the name of the bank, which would make it responsible for debts, but have it transferred to the name of a clerk. Then, when the annual election comes, they

(a) See Test., p. 178.

(b) See Test., pp. 174, 175.

(c) See Test., p. 196.

(d) See Test., pp. 346, 347, 348, 349, 350, 687, 688.

vote all this pawned stock and get all the proxies they can, which gives them a majority, and so they put in a board of trustees of their own making. They do not own any stock in many of these mines, but they put in a board of trustees and manage the mine. They also loaned money to many of these mills, and afterwards foreclosed the loan, and got hold of them for one-fifth of the price. Mills that cost \$5,000,000, they obtained for less than \$1,000,000. (a) They had the management of the mines, and withheld the ore from the mills they wanted to break up. Thus they secured many of these mills, (b) and they get \$12 for every ton worked. It has been shown that they can reduce in their mills 1,000 tons a day, for which they get \$12,000, including freight on the railroad, which they also own.

PROFITS OF MILLING.

We have the statement here of Mr. Requa, one of the bank's superintendents. (c) He says milling costs them \$4 50 per ton. Consequently they make—how much? Take \$2 off for hauling, that leaves \$10; \$4 50 from \$10 leaves \$5 50, and on a thousand tons (d) that makes \$5,500 a day clear profit. (e) That is what they make—\$5,500 a day clear profit. Now, by having control of a mine, it becomes very easy for them to manage to get out as much ore as possible; they do not care whether the mine makes any money or not, because they do not own the mine; they own the mills, and consequently they take out as much ore from these mines as they can, and if they have no ore, they take out bed rock; take out the country rock, that contains nothing at all, and send it to the mills and mix a little ore with it, and crush it, and get \$12 a ton for working that ore, and not enough comes out to pay for hauling sometimes. (f) They make \$5,500 a day profit, and it runs the mines behind. If they take out \$6 a ton, and the mill gets \$12, the mining company loses \$6 on every ton.

(a) See Test., pp. 351, 352.

(b) See Test., pp. 163, 354, 515.

(c) See Test., pp. 176, 535.

(d) See Test., p. 203.

(e) See Test., pp. 519, 520, 521.

(f) See Test., pp. 203, 297, 353, 686.

What is the result? When there is no money in the treasury and the mine runs behind, the trustees, who are the agents of the bank, put on an assessment, and, if not paid, the stock is sold out.

HIDING ORE. (a)

But the great game is this: By having control of a mine, they know exactly what is going on in that mine. If it contain but a little good ore, or low-grade ore, it sells at a low rate. They keep watching it; these superintendents have men in the mine watching; and when a body of ore is struck, they are shut up at once. Nobody is allowed to go in there except the few men who are digging. They put a bulkhead across. They just prospect it sufficiently to find out what it amounts to, and keep the men down there digging away, and treating them in splendid manner, (they give them champagne.) (b) The moment they find there is ore down there, they telegraph in cipher (c) to San Francisco, as it is shown in the testimony, and buy up the stock. (d) And sometimes this ring goes to work and breaks the stock down first before they buy; they start the miners on drifts in the wrong direction, and say there has been a cave, for fear anything would leak out about it. They take out poor ore, or bed rock, which necessitates assessments, and thus run the stock down. Everybody that owns stock is assessed, (e) and they get it all in the end. We had a striking instance of this kind in one of the mines lately. The stock went down to \$2 a share, when gradually the ring got all the stock concentrated in their hands—got it away from the poor fellows who were paying assessments (f)—and then they made known the existence of this ore, which they had concealed, and the stock went up to an immense figure. They are in a perfect fever just now. The stocks on the Comstock lode have gone up from \$3,000,000 to \$50,000,000 in a year. Just now the ring owns largely in stocks, and they will

(a) See Test., pp. 295, 166, 174, 176, 466.

(b) See Test., p. 175.

(c) See Test., p. 551.

(d) See Test., p. 175.

(e) See Test., pp. 178, 690.

(f) See Test., p. 300.

realize millions out of them, and they have managed such operations about twice a year since the mines were discovered. Most of the outsiders who buy these stocks get swindled in the end, and I suppose the people out there think that is smart!

CERTAIN RUIN TO OUTSIDERS.

When the stocks get about the highest the ring steps out, and a crash takes place, which ruins all the others. (a) And such a crash is impending now; it will certainly come before many months. It will appear very clearly to you, that this California Bank ring, or the Union Mill and Mining Company, (it is all one affair, as has been shown here,) are managing things over there just to suit themselves; (b) and the head manipulators are Ralston, the head of the Bank of California at San Francisco, and Sharon, their agent at Virginia City. They get the profits out of the mines and mills, and I tell you, gentlemen, they are making millions out of it. I do not wonder that Mr. Ralston can live in a princely residence, and keep 60 horses for his own use. The ring is filching it out of the people. They do not get it honestly.

These people are opposed to the tunnel, and why? If that tunnel goes in, it fully opens the mines; there will be no hiding; (c) from the surface down through the whole length of that lode a new basis of operations will be made; and it will lay open every mine down to the tunnel level—yes, every mine will be laid open. They cannot hide the ore any longer. That is one of the causes of opposition.

The second reason is, it will be a great deal cheaper to get the ore out through the tunnel; and we shall erect reduction works at the mouth, which can work so much cheaper and get more out, which will stop the whole of their milling operations. Now, to defeat this project they misrepresent it. They say the tunnel is useless. The truth

(a) See Test., p. 302.

(b) See Test., pp. 177, 178, 686, 687.

(c) See Test., pp. 193, 214, 278, 279.

is, it is going to stop these rascally operations, and that is why they oppose it. (a) These mines lose \$8,000,000 a year in the yield, as operations are at present carried on. We can get out \$6,000,000 of that at the mouth of the tunnel that they do not get out at all now; that is wasted now. I have tried to explain the management of these mines and some of the manipulations of the Union Mill and Mining Company, and hope I have made myself understood.

PERCENTAGE EXTRACTED FROM ORES. (b)

There is another most important item, which these people profit by in working these ores, and that is the tailings. (c) We have shown, by nearly every one of the witnesses, that they only get out 65 per cent. from the ore; consequently 35 per cent. remains in the tailings. The mines yield \$15,000,000 a year in bullion; that would therefore bring the assay value of the ore to \$23,000,000, showing a loss of \$8,000,000 a year in tailings. The Union Mill and Mining Company will some day sell those tailings, and get millions for them, besides the millions they get for milling the ores. That is what they get, and they get it out of the people who own the stock. That is a perquisite of the mills.

Now, Mr. Sunderland has tried to show by two of his own men, Requa and Batterman, who were sent to testify by the Bank of California, that they take out as much as 88 per cent. Every other witness has stated that they cannot take out over 65 per cent. One of the witnesses has said that they may get 72 per cent. Mr. Luckhardt, who was the most competent witness we had here, who was five years on the lode, and whose business it was to go down into these mines and examine them, and who is a scientific and educated gentleman and a mining engineer, says you cannot take out more than 65 per cent., because the other 35 per cent. are rebellious metal. You cannot

(a) See Test., pp. 177, 310, 311, 346, 355.

(b) See Test., pp. 159, 160, 256, 311, 354, 630, 631, 632, 706, 707, 708, 754.

(c) See Test., pp. 266, 310, 354.

take out the other 35 per cent. by amalgamation. I will add my own testimony to that. I have made repeated experiments for months and months—sat up all night in order to follow out some experiments—to find out what could be obtained by raw amalgamation, and I give my testimony that you cannot get out more than 65 per cent. I have analyzed what remains, and it is a combination of silver and lead, copper and zinc, and other base metals, and sometimes of sulphur. You might run it in the pans for a year, and could not get out any more by amalgamation. That portion of the ore has to be worked by smelting or chlorodizing-roasting, (a) and I would not care if they would send one hundred witnesses here to swear to the contrary. I know there must be some mistake about their assays or results somewhere; you cannot do it. Mr. Luckhardt most emphatically declares so.

Mr. Raymond states, that all the reports received by him give the yield at 65 per cent. It is no use for Mr. Sunderland, or the Bank of California people, to say that they get 88 per cent.; it is not so.

SIXTY-FIVE PER CENT. THE AVERAGE YIELD.

These rebellious ores are called in Mexico "bronzes." Every Mexican knows that will not amalgamate at all. You cannot do it. It cannot be done. Mr. Requa has told us they get out 92 per cent. He says that the Union Mill and Mining Company paid reclamations to his company. He has told us that they have paid during the last year \$16,400 in reclamations. In order to explain that, I will state that these mill companies have to guarantee 65 per cent. It is only a nominal guarantee. It does not amount to anything, because they take out just what they please. There is but one crowd managing it, but he says they paid this reclamation. The Chollar company took out last year \$3,440,023, and they had paid to them a reclamation of \$16,400. He wants to make out that they received more

(a) See Test., pp. 735, 736.

than 65 per cent., because the Union Mill Company paid that reclamation. (a) Now, gentlemen, I will tell you how much that amounts to—one half of one per cent., what they received back in reclamations, and he wants to make us believe that is a fact worth mentioning. Sixty-five per cent. were guaranteed, and they paid back one-half of one per cent. or \$16,400 on this immense sum of \$3,500,000 nearly. That is to make the people believe they pay reclamations. It is all a humbug. I do not believe they get out 60 per cent.—only make the people believe they get out 65 per cent. and over. (b)

Now, see what Mr. Luckhardt says about this. It is a very important point:

"Q. So they do not seem to get out more than 65 per cent. of the assay value of the ore which is returned to the mines?

"A. I think a great many people there say that they get out 80 or 85 per cent., and I think, in some instances, judging from the character of the ore found, that it is possible to get out that, but not as a general thing, because the ores of the Comstock are of such a nature that any man who knows the nature of the ores, and knows how to judge of ores, would consider it to be a preposterous idea to get out 80 or 85 per cent. by crude amalgamation. By treating those ores by previous processes anterior as to amalgamation, you may get from 80 to 85 per cent., but I think from 60 to 65 per cent. is the general yield of those ores." (c)

In the cross-examination Mr. Sunderland tried to confuse him on that point, and wanted to know what experience Luckhardt had in milling. Now, Luckhardt is the most practically experienced man we have had here as a witness, and there is probably no man living at the present day who knows so much about those mines as he does. He was asked:

"Q. Then if that is the only experience you have had of milling, and the only opportunity you have had of knowing what percentage is saved from the assay value of the Comstock ores, how can you state that they only saved from 60 to 65 per cent.?

"A. Because I have so frequently assayed those ores, and I know their character so well. I know what will amalgamate and what will not amalgamate: that is just as good proof to me as if I had stayed and worked there for twenty years." (d)

He is a scientific man. He knows you cannot amalga-

(a) See Test., p. 522.

(b) See Test., pp. 159, 160, 256, 311, 354, 630, 631, 632, 706, 707, 708, 754.

(c) See Test., p. 707.

(d) See Test., p. 759.

mate it, and that is exactly what I know. That disposes, I think, of that part of Mr. Sunderland's argument.

WATER THE GREAT OBSTACLE IN MINING. (a)

Now, in regard to drainage, which is a very important point, these people have strenuously tried to show that there is no water in those mines. They have tried to impress that on the people, and have hired the newspapers to say there is no water in the mines, and consequently, as they argued, there would be no necessity for the tunnel. They have done that for years. They have been trying by every effort to break up the enterprise, by saying there is no water in the Comstock. We have shown that to be false here by the testimony of every witness, and false by their own statements. Water is the great obstacle in mining. It has nearly ruined some of those mining companies. After the tunnel is run in, and these shafts which now exist are connected with it by bore-holes, such as you bore for oil-wells in Pennsylvania, the water will run out; nobody can deny that. (b) They have stated there are clay seams as tight as a bottle, and that the water will all stay in, but these bore-holes will let it run out. They have been denying my statements for years. I cannot inform the whole world. I have told them all they have got to do is to make a bore-hole, and repeated it a thousand times, and at last we have it on record to show, but they will keep on denying it notwithstanding. That is their style of warfare.

Now, as far as the Ophir mine is concerned, I put to General Wright some questions in regard to the quantity of water in that mine. We have the statement here of the former superintendent of the Ophir mine, who says that "it is a dry country, and there is no water in it; everybody knows it;" and I have shown here, by that same man's official statements, as they are called, how much water they took out of that mine every day. I asked General

(a) See Test., pp. 82, 87, 88, 89, 91, 96, 180, 182, 217, 304, 306, 307, 308, 330, 331, 333, 334, 335, 338, 340, 358, 359, 360, 361, 691, 692, 693, 694, 695, 697, 742.

(b) See Test., pp. 41, 42, 232, 675.

Wright how much they were pumping from that mine every twenty-four hours, according to this same superintendent's statement. He said the weight of the water was 336 tons, of 2,000 pounds each, per day, and they were only hoisting 12 tons of rock. They pumped that out, which is pretty nearly equal to lifting it out. Then I asked him as to the average per day for the year commencing with June, 1870, and ending June 1, 1871.

The average, he said, was 10 $\frac{3}{4}$ inches.

"How much," I asked, "would that be in tons in 24 hours?"

He answered:

"THE AVERAGE IS SEVEN HUNDRED AND EIGHTY-ONE TONS OF WATER PER DAY IN THAT ONE MINE." (a)

There it is—781 tons of water out of one of the mines every day for a year. Let me read that statement, furnished to the commissioners by Mr. Day: These people feel outraged because their statements are doubted here; they may be high-toned men, but they are in with the bank, and that condemns them. This is his statement:

"I hold that there is no more certain event of the future than that the water will decrease in the Comstock as the mines grow deeper, the opinions of Mr. Sutro, Baron Richthofen, or any other scientific gentleman to the contrary notwithstanding, and the idea of running a tunnel four miles or more in length, at an outlay of millions of dollars, to tap *what is almost certain to be very nearly a dry fissure, seems to me to partake of the absurd in the extreme. This is a dry country, and all who have looked upon it know it.*"

General Wright testifies that the average for last year was 781 tons of water per day out of that one mine—that identical mine of which that man was speaking, and of which he was the superintendent. Then I asked General Wright—

"Did you make any figures on the maximum quantity for the year, as stated by Mr. Day, which is 18 inches?"

And General Wright answered:

"Eighteen inches gives the weight for 24 hours at 1,313 tons"

That they had to pump out per day to get out 12 tons of

(a) See Test., p. 360.

rock. (a) That was shown by the testimony. In the Gould and Curry mine he says there was more water than that.

Then, if we take the aggregate of all the mines, it amounts to at least three or four thousand tons for every 24 hours that they are pumping out; (b) and then it must be recollected that these gentlemen were over there at the end of three years of immense drought. (c) The whole country had dried up. The springs had dried up. There was no water there, comparatively.

INDIRECT COST OF PUMPING. (d)

Now, gentlemen, the actual expense of pumping water is but a mere trifle compared with the indirect cost, which is perfectly fearful; while you are sinking a shaft, and are hampered with water, you cannot progress with your work; thus you are shut off for months sometimes, and cannot go on; and the expenses of the whole concern, for office, engineers, &c., are going on all the time. The indirect expense of working is probably three or four or five times as much as the direct cost. The commissioners did not bring that into account in their report at all. It is difficult to get any data on the indirect cost. I think Mr. Luckhardt was asked a question about the cost of raising water. He said:

"Where there is much water there is always a great retardation of the work.

"Q. Isn't that a greater expense than the actual pumping?

"A. Oh, to be sure. The pumping itself is the least of the expense of getting rid of the water."

Now, as far as pumping water from great depth is concerned, I have telegrams in my pocket which came within the last two or three days, about this very Ophir mine and also the Savage. Mr. Sunderland has stated here in his speech that two-thirds of the Comstock lode is as dry as this floor; and that is what they have been trying to show for

(a) See Test., pp. 5, 6, 7, 13, 14, 15, 42, 305.

(b) See Test., pp. 84, 90, 95, 378, 379, 453.

(c) See Test., pp. 180, 181, 304, 307, 329.

) See Test., p. 772.

years; and I say it is not true. There is one dispatch dated April 13, the other April 15. One says:

"In Savage they had to stop working on shaft between 1,400 and 1,500 feet levels, on account of large volumes of water. Ophir also much troubled with water."

Dispatch dated 15th says:

"Expenses for pumping in the Ophir for March, \$5,800. This is official statement made by the superintendent."

THEIR OWN LETTERS CONDEMN THEM. (a)

That is on the 15th of this month. Now, I want to call the attention of the committee for a few moments to some extracts that we have been fortunate enough to get hold of, and at the same time I will reply to the motion of Mr. Sunderland to have that testimony stricken out. They have been denying for years that there is any water in those mines, and that has been their great fight all along; and when we offered this testimony—the extracts from letters written by this same man Day, whose statement I have just read, saying that "this is a dry country, and everybody that looks upon it knows it"—when we have that man's own letters, written to his superior officers in San Francisco from day to day, making reports of the mine, and have got these extracts sworn to by the present superintendent of that mine, he made a motion to have that testimony ruled out. Of course he would like to have that done. We have caught them in the act now. They have been telling untruths, and here we have the proofs on them. We have got them on the record. Here are this man's letters, which he wrote to the president of the company from day to day, stating how much water there is in the mine and how much they are troubled with water, and that very motion of Mr. Sunderland's is pending before this committee to have that testimony ruled out. On what grounds does he want it ruled out? On some pettifogging law quibble. He says they are "copies of copies." We ought to produce the originals. Why, gentlemen, they are copies made

(a) See Test., pp. 791-810.

from the press copybook. They are copies of letters sent to San Francisco, and the present superintendent copies them and swears they are correct. (a) The other evidence introduced here in the commissioners' report is not sworn to in any shape whatever. They want to get the truth ruled out by a legal quibble. Mr. Sunderland must think that Congress is a petty justice's court, where prisoners known to be guilty are often rescued on insignificant technicalities of the law. This is the best testimony we have got. It convicts them fully of a most outrageous perversion of facts. It also shows the difficulties of pumping, the breaking down of machinery, and the consequent enormous indirect expense. I will read a few extracts from that man's letters. He writes on June 10, 1868:

"Depth of shaft, 287 feet. I assumed full charge on Monday. Work at shaft is progressing as well as can be expected under the circumstances. We are raising a large amount of water, more than the pump we are using has capacity for."

Then, in the same letter, he says:

"If no accident happens to the pumping machinery within the next two days, the tank and screw drift, with the necessary machinery, will be complete to station the first plunge pump, and the shaft deep enough to swing the sinking pump for the second lift. That being done, I see no reason why we should not make good progress in sinking."

June 14, he writes:

"Friday we were occupied in making preparations for putting in two 12-inch pumps."

Gentlemen, I wish to call your attention particularly to the fact, that these extracts will show what the enormous, indirect cost consists of, independent of pumping. The commissioners only gave the presumed direct cost of pumping the water out.

On October 16, 1867, this same man (Day) writes:

"Large amount of water coming in from face of main drift, which is boarded up at present to prevent a run."

October 21:

"Large flow of water."

October 22, 1869:

"The pump rod, to lower pumps, broke at 8 o'clock last evening, and has not yet been brought to the surface. *One man killed* this morning by the

(a) See Test., p. 780.

cable breaking in the pump shaft. It is difficult to form an estimate of the delay it will occasion us."

They do not count the life of a laboring miner. They count the dollars and cents only.

October 24:

"Our present flow of water seems to be entirely independent of the water in the old mine, which I regard as indicating the existence of a body of ore to the north, and separate from that worked in the old mine."

November 6:

"The water is still rising in the shaft, and now stands about 270 feet from the bottom."

Mind, now, it says 270 feet of water in the shaft. They had to get out 270 feet of water in order to get to work again. Then he goes on to say, in the same letter:

"We are now taking water from the shaft at the rate of 20,000 gallons per hour; and when the machinery (hoisting) is ready for use, we will increase that amount 10,000 gallons. It is impossible, at this time, to form an intelligent opinion of the time that will be required to free the drifts of water."

November 10:

"*Our misfortunes, in connection with the strike of water in Ophir, seem to follow us up.* Last Sunday morning, when our second or lower plunger was covered about 60 feet with the rising flood, it very suddenly ceased to throw water, and is now about 200 feet under water. [That's a dry country!] We are building a 500-gallon tank to use with the new engine. With that, and the one now in use of 300 gallons, will enable us to raise to the surface 16,000 gallons per hour. As I stated in my last, it is impossible at this time to form an intelligent opinion of the time necessary to clear the drifts of water. Of one thing I am convinced, however: that *our consumption of wood* for the next six months *will be perfectly frightful.*"

Recollect, gentlemen, if that tunnel had been made, every drop of that water could have been run out, and under our contracts they only have to pay us \$2 a ton for the ore taken out; and they have had no ore in that mine for five years; yet they protest against that tunnel. We have shown that $\frac{2}{3}$ of the mines have no ore; $\frac{2}{3}$ get the benefit of the tunnel for nothing; only $\frac{1}{3}$ will have to contribute to it.

December 18:

"Our progress in lowering the water is quite satisfactory. To-day it stands in the new shaft about 220 feet deep."

December 19:

"*We are bending all our energies in our endeavors to free the new works from water, and gaining gradually upon it.*"

It does look like a dry country—"we have now 220 feet of water in the shaft!"

December 22:

"We are working all our machinery to utmost capacity, consequently accidents are liable to occur, but will guard against them as much as possible."

December 24:

"I assure you *there will be no let up*, and I believe few *drawbacks*, until we have the water well under control."

December 25:

"We have just succeeded in completing repairs to the lower plunger or middle pump, and made connection with the lower pump."

December 27:

"Yesterday evening we had the water at a lower point than at any previous time; but immediately after *the first earthquake* shock, it came up in the shaft some 25 or 30 feet in a short time."

December 28:

"We have the water down 25 feet below lower plunge pump, which leaves 175 feet in shaft."

December 31:

"Am pleased to be able to report to you a decided gain upon the water to-day—155 feet from the bottom; but it is *very stubborn*, and requires heavy and persistent work. I have no doubts as to the result."

January 5, 1870:

"We are crowding the work steadily in the shaft to-day. We have only 130 feet of water."

January 10:

"Since my last, we had the misfortune to lose one of our large tanks."

January 12:

"We do not succeed in getting the water in the shaft any lower than heretofore reported."

January 17:

"We are still making vigorous battle with the water, and driving it slowly down. We have it now within 110 feet of the bottom."

January 25:

"Owing to some delay in repairing tanks, the water is considerably up in the shaft."

January 28:

"We do not make rapid progress; but we do gain, and hold all that we get, which is encouraging, and shows that it is entirely a question of time as to when the new works will be cleared of water."

January 31:

"Mount Davidson has been shaking again, and consequently the Ophir water has increased, as usual in such cases. Sunday morning there was only 74 feet of water in shaft, and going down nicely. To-day there is 95 feet,

notwithstanding pumping and bailing has been going on without any interruption."

February 3:

"There was some delay last night, both with pump and large tank, consequently the water in shaft is higher to-day than usual."

February 12:

"Water at No. 1 at 600-foot station. *It sticks to that point with great tenacity*; but we are bound to get the best of it in time. We will be compelled to stop our large tank about three days next week, to refill the large cog-wheel."

February 14:

"*This water is a monster elephant*, but I know we can handle him; but it won't do to relax in the least the grip we have on it. In No. 1 the water is about 150 feet. In old mine it has lowered in last 48 hours 3 feet."

Now, what reliance do you place on that man? He told the commissioners it was a dry country, and they believed him.

February 15:

"Water in No. 1, 160 feet; filling wheel will be completed this evening."

March 4:

"*We are repairing again to-day* at shaft No. 1. About one half the cogs in large wheel gave out last night."

You see these are the indirect costs. These people have not mentioned them at all. They were working there four years in order to get down a few hundred feet in a shaft.

March 5:

"The repairs at shaft No. 1, spoken of yesterday, are completed, and machinery moving as usual: 150 feet of water in shaft No. 1."

March 18:

"Water in No. 1, 65 feet."

March 21:

"The bucket to our lower pump has been failing for the last few days. If we succeed in replacing with a newly-dressed bucket, there will be but little delay in pumping. Should we not succeed in this, an extra pump, which we have in readiness, will have to be lowered, which will cause at most only a few days delay."

March 22:

"At No. 1 we have not succeeded in drawing bucket from lower pump; have commenced active preparations for putting in extra pumps."

March 24:

"There is to-day 100 feet of water in No. 1; lower pumps working to about half capacity."

March 26 :

"Water to-day in No. 1 is about 80 feet; will commence filling large cog-wheel this evening. You can assure Ophir stockholders that we are doing all in our power to reduce this water. Delays to some extent are unavoidable. There is no time when there is not a large stream of water coming to the surface at Ophir shaft, and it must tell before long."

March 31 :

"Have just commenced lowering pump. Putting this pump in place is attended with so many difficulties, that it is impossible to say, with much certainty, the length of time that will be required, but probably about three days."

April 1 :

"At shaft No. 1 we are still engaged in putting down pump; getting along very well; foundation to pump-bob is becoming a little shaky, and it may be necessary to overhaul it before making our next great effort at lowering the water."

April 9 :

"At shaft No. 1 we have repaired old pump, and it is doing good work."

April 11 :

At shaft No. 1 the drift is free of water. And right here allow me most sincerely to tender you, as president of the Ophir S. M. Co., and your associate trustees, my heartfelt thanks for the generous co-operations with which you have sustained me in this fight; for truly a battle it has been, of no ordinary magnitude, and I feel that a great weight of anxiety and responsibility has been removed."

Recollect, now, after pumping for years to get into that drift—doing nothing but pumping—he comes at last and says :

"No. 1 is free from water."

He thought he had got rid of the water, but he had not. He congratulated them too soon. That was April 11th.

On May 7th he writes :

"Increase of water referred to yesterday still continues, but I have no fears of being flooded."

May 16 :

"Water about as last reported."

May 26 :

"Quite an increase of water."

June 3 :

"Last night, about midnight, *the irons on one end of our pitman rod broke*, which renders our pumps useless until repaired, which will not be before tomorrow morning. Consequently, our drifts are filling with water, but I do not apprehend any serious damage to them."

June 4 :

"Started pump this morning at 7 o'clock."

June 9:

"The pump is laid up to-day, owing to the breaking of some of the upper gearing last night."

June 10:

"At shaft No. 1 *pumping machinery is very much demoralized*. The very best that we can do, it will probably require ten or twelve days before we can regain the ends of our drifts and resume work. I regret this very much, but do not see any way by which this accident could have been foreseen or avoided."

June 14:

"Depth of water, 150 feet."

They had it dry before; now it was filling up again.

June 16:

"Water is 175 feet in depth, and slowly rising."

June 20:

"Pump started last evening at 7 o'clock. The water is now lowered to a depth of 60 feet."

They put in so many more pumps that they could master the water at last.

On September 2 he says:

"The water is wholly under control of the pump."

February 16:

"In the upraising there is a slight increase of water to-day, somewhat impeding progress of work."

Then there is more trouble of water; but I will read no more. This man Day, I must remark, was discharged last December, because the bank ring lost control of the mine, and a new set of trustees came in; this is the first time we have been enabled to get at any of the mining company's books. The new superintendent came in January, and he writes on January 2, 1872, this year:

"There are three 12-inch plunger pumps, and one of 10 inches in service, and the fifth one, 10 inches, is under construction, and will be ready to put in place as soon as needed. *We are raising 146,000 gallons of water per twenty-four hours.*"

That disposes of this water question. I will comment on it no further. The commissioners went out there to find out all about these mines, and the quantity of water; and the difficulties of pumping it out, direct and indirect, was one of the principal questions to be decided. But they took the superintendent's statements, who told them

that it is a dry country, and they made their report, based upon the statements furnished by these people.

VENTILATION. (a)

I now come to the subject of ventilation, and a very important one it is in mining. I cannot go into the evidence at length which was taken. It would carry me too far altogether. We have asked every witness we had here about ventilation, and I believe they—particularly Newcomb, Raymond, and Luckhardt—spoke about the great importance of ventilation in mines, and what it accomplishes. In this connection I will read a short extract, one from the latest number of the "American Engineering and Mining Journal," which came to-day, in which are a few remarks in regard to the commissioners' report. It says:

"Our view is confirmed by an exceedingly elaborate and able treatise on the Comstock vein, its mines, and their intersection by the proposed deep tunnel, which has recently appeared in the *Berg-geist* of Cologne, one of the leading mining journals of the world. The author is Berggrath Burkart, who writes with all the published works on the subject before him, and draws conclusions quite favorable to the tunnel. His criticisms upon the report of the United States commission are rather severe; he blames the commission for accepting without question the statements of the mine superintendents, and shows that on the subject of mine ventilation these gentlemen have made, and the commission has too confidently adopted, *assertions wholly unfounded in the theory or practice of mining*. The particular proposition which Burkart attacks is unfortunately repeated several times in the Report and Appendix, viz: that when the tunnel is done, and the shafts connected with it, the air-current will go straight up the shafts; and that it will be impracticable to carry air to the headings where men are at work. *Of course this statement is ridiculous; and we are mortified that a foreign critic should find it in an official and professional document*. The superintendents of the Comstock mines are in many instances agreeable gentlemen, good business men, and excellent mechanics and engineers so far as their experience goes. It is their boast that none of them are "scientific theorists;" and no doubt their practical skill is better than mere theory for many purposes. But what they lack, though it may surprise them to hear it, is not theory, but practice. If they had had any real practical experience in deep mining and the natural ventilation of mines, they would not have talked such rubbish to the commission on that subject. When a man pronounces his particular locality to be "an anomaly;" says you can't tell which way the air will go in his mine; that a deep tunnel connecting the bottom of his mine with daylight, on a level two thousand feet below the top, will give him no better ventilation than a level connecting the bottoms of two shafts, or that the natural air-current developed by such an enormous difference in altitude and temperature cannot be conducted wherever it is wanted throughout the mine, he is really propounding the wildest kind of theory, and what he needs is practice."

(a) See Test., pp. 179, 199, 395, 624, 625, 700, 739, 749.

The opinion given here is by a gentleman who must be seventy years of age, for he is mentioned in Ward's book on Mexico, published in 1827, as a leading mining engineer in Mexico, and who is now looked upon as one of the great authorities of Germany on mining questions. This gentleman has taken a great interest in the mines of the Comstock lode and a deep tunnel, and he has managed to obtain all the documents and all the publications on the subject. I do really believe that he is more familiar today with that lode and all its general details than almost any other man, even out in that country where these mines are located. About the great improvement in ventilation of the mines there can be no question: (a) after the tunnel is completed, connecting with shafts from the surface 2,000 feet in depth, there will be a draft of air through there that will bring a welcome supply to the miners who are compelled to delve and labor for eight or ten hours every day in that stagnant atmosphere. We have reports here of a commission appointed by the English Parliament, and it is stated that forty-two per cent. of the miners die of miners' consumption; that they don't find it out that they are becoming consumptive until they leave the mines. They feel unwell, and go off somewhere to die. It is highly desirable to have the thorough ventilation which this tunnel will make possible.

In regard to the saving of timbers, we find, according to the testimony, there are 16,000,000 feet of lumber used in that lode every year. It will last two or three years with poor ventilation, and probably ten years on the average with good ventilation. That would make an annual saving of several hundred thousand dollars.

TEMPERATURE. (b)

The question of temperature is one of the great questions connected with ventilation, According to the state-

(a) See Test., pp. 168, 169, 170, 171, 199, 624, 625.

(b) See Test., pp. 169, 170, 171, 172, 627.

ments we have here, the heat in these mines is from 85° to 110°, and nobody will pretend to say that men can do as much work in a temperature of even 95° as they can at 70°. To put the lowest estimate upon it, twenty-five per cent. in the cost of labor will be saved by having those mines thoroughly ventilated, over what can be done with the present system of ventilation, where the thermometer rises to 100° and 110°; and when they go down deeper it will be still higher. One of the most important things this tunnel will do is this: it will allow the sinking of a great number of shafts, (a) which, as I have shown in this question of drainage, can only be made under the present system at an enormous expense. They were about four years and a half sinking the shaft of the Ophir mine, whereas if they had had a bore-hole down to the tunnel they could have put their shaft down in a year. If they had these shafts all in, they could connect them at each level, and have the most perfect system of ventilation possible. We have the testimony of these witnesses about the reduction of temperature on completion of the tunnel and the sinking of these shafts. General Foster states, on page 72, some facts in relation to this. I asked him:

"Should you think they could do two-thirds as much work with this high temperature as with the lower one?"

"A. I don't think they would do half as much."

On page 173 we have Dr. Newcomb's testimony. I asked him:

"Would you consider that the working capacity of the men employed in the mines below the 1,000-foot level would be increased twenty-five per cent?"

"A. To what other depth?"

"Q. To the tunnel level; from 1,000 to 2,000 feet?"

"A. Well, I should think it would. The lower a level the greater the heat, and the more difficult to work in the mines."

The other witnesses were asked a great number of questions on this subject, and they all agreed in their answers. (b)

General BANKS. There is no question about that.

Mr. SUTRO. These gentlemen have disputed this all the time. They make the wildest kind of arguments against

(a) See Test., pp. 42, 43, 44, 108, 438, 439, 440, 443.

(b) See Test., pp. 72, 74, 172, 173, 392, 393, 394, 395, 627, 699, 700, 703, 704.

it. Mr. Raymond and Mr. Luckhardt, and in fact all, agree there will be an increase of twenty-five per cent. in the capacity of labor. All these shafts could be made, and connections therefrom, with the greatest facility. It becomes a very important question, when you employ 3,000 miners at \$4 each a day, (\$12,000 a day.) If you can save twenty-five per cent. of that sum, or \$3,000 a day, you save over \$1,000,000 a year. That the commissioners have not taken into account at all.

TRANSPORTATION. (a)

I now come to transportation. Instead of hoisting out this ore as it is done now, to the top of the ground, then carrying it on this railroad down to the mills, (b) the ore may be lowered down at a cost of ten cents a ton, and it can be carried out on the railroad for from eight to ten cents a ton for the whole distance by stationary engines at the mouth of the tunnel, running cars in and out by means of a wire rope—ten cents a ton delivered at the mills at the mouth of the tunnel. (c)

General BANKS. What does it cost now?

Mr. SUTRO. It costs, according to the statements of these superintendents—

General BANKS. What do you think it costs?

Mr. SUTRO. It costs \$1 a ton to raise it out, and waste rock costs \$2, or \$3, or \$4 a ton, in mines where no ore is taken out. It costs more a ton to take out a small quantity than it does to take a large quantity. Then it costs from \$1 50 to \$2 50 a ton to transport it to the mills on the river. (d) Where we propose to erect the mills it will cost for transportation, according to the statements of several of the witnesses, twenty-five cents a ton. I put it at about ten cents a ton. According to these statements, hoisting and transportation now cost from \$2 to

(a) See Test., pp. 20, 21, 22, 24, 26, 202, 457, 458, 663, 704, 705.

(b) See Test., pp. 158, 309.

(c) See Test., p. 309.

(d) See Test., p. 158.

\$2 50 a ton, but I know it certainly costs from \$3 to \$4. General Dodge states it costs, on ordinary railroads, $1\frac{1}{2}$ cents per ton a mile. We have to transport it over four or five miles of tunnel. At five miles the cost would be $6\frac{1}{2}$ cents. Call it 10 cents to carry it out, and 5 cents to lower it to the cars. One of the commissioners gives the cost at about 35 cents. It is a known fact, in all the reports we have here on mines in Europe, that stationary engines, with wire ropes attached, for a distance of from one to five miles, are the cheapest appliances that can be used. It is cheaper than rolling stock and locomotives on railroads. It certainly would not cost any more than 25 cents under any circumstances. What probably costs them now from \$3 to \$4 a ton, if the whole truth were known, and the saving made, would amount to at least \$3,000 a day; that is, on the present yield, without counting any increased production.

REDUCTION OF ORES.

I will now refer to the reduction of these ores. At present they are taken to little mills all along these ravines, and down the river to mills, which are scattered all over the country, where they have no chance for concentrating independently of the difficulties from lack of water, which by themselves would be insurmountable. They lose 35 per cent., as I have shown already by testimony which cannot be questioned, although these people try to show that they have taken out as high as 90 per cent. It is not correct, and is shown to be impossible.

An important question connected with this tunnel and with the whole mining interest is the concentration of the ores. (a) We all know that the metallic parts contained in this ore are of greater specific gravity than the vein matter itself, whether it be limestone, or quartz, or any other gangue; and consequently, by allowing the pulp after it is reduced, to pass over concentrating tables, of which there is

(a) See Test., pp. 153, 248, 628, 708, 709.

a great variety in use in Europe, we can get rid, in ten tons of ore, of nine tons of waste, and retain one ton, which contains almost the whole value. (a)

LARGE ADDITIONAL YIELD.

Now, I mean to say this, provided there are concentrating works at the mouth of the tunnel, for the erection of which extraordinary facilities exist, that, after the ore is amalgamated, these tailings may be run over concentrating tables, and nine tons out of ten got rid of, which leaves us one ton to be reduced; we can put that one ton in a chloridizing Stetefeldt furnace, and get 90 per cent. out of those concentrations. In fact, the figures given by Mr. Luckhardt, which are quite conclusive, show that, instead of getting 65 per cent. out of these ores, we can get out 90 per cent., making full allowance for loss in concentration. Consequently, we save 25 per cent. above the present yield. The value of the ore extracted is \$23,000,000 per annum, (b) which yields \$15,000,000; the additional 25 per cent. would amount to \$5,750,000. (c) We get that out in addition to what is taken out now. The reason why we can do that, and they cannot at their present mills, is this: In order to establish those concentrating works, you have to have, in the first place, *an abundance of water, which the tunnel will furnish*, (d) and a large space adapted to that purpose. At the mouth of the tunnel there are hundreds of acres of the very best land, sloping down towards the river gradually—a gradual decline of 155 feet, in a distance of a mile and a half. It gives the natural slope necessary to make these concentrating works self-acting. The pulp, by means of the water, will pass from one machine to another, and it does not require the labor of hands at all hardly. It does its own work, and the worthless part of the rock, the nine tons out of ten, passes off, and we retain only one; and in that manner we can get some 90 per cent. out of the ore.

(a) See Test., pp. 205, 206, 207, 214, 629, 708, 709.

(b) See Test., p. 160.

(c) See Test., p. 161.

(d) See Test., pp. 628, 629, 710.

GREAT WATER POWER WITHOUT ANY DAM.

The commissioners have stated in their report, that there must be a large dam constructed on the river, in order to secure a water power. We have shown most conclusively, by several of the witnesses, that we can reduce the ore at \$5 a ton, and that the whole difference between water and steam power is only \$1 on a ton, and the saving, by means of concentration and otherwise, will probably average \$15. General Wright states that we would get 86,445 (a) horse power, if a large dam be constructed on the river; but if there is no dam at all constructed, if the water is taken out at that same point, we get 100 feet of fall at the mouth of the tunnel; and if reservoirs are provided in the mountains, to store up the water accumulated from rain and winter snows, to be used in summer time, we would still get 33,900 horse power, as deduced from the above figures, at the mouth of the tunnel; and all that is required at the present rate of production is 2,000 horse power; that is, to reduce 1,000 tons a day. That is all that is required; yet we would get 33,900 horse power, even if we make no dam at all.

Mr. Sunderland says the commissioners state, that if that dam is not made the tunnel will be of no value. That statement is founded upon the reports furnished by the superintendents, which we have already shown are not correct. We have the testimony of two of the witnesses, both Raymond and Luckhardt, that the tunnel itself will furnish water for all these concentrating purposes. (b) You will acquire a large quantity of water by draining six or seven or eight square miles of country, at a depth under Mount Davidson of 3,600 feet. It will be quite sufficient for all concentrating operations. That water is absolutely necessary, (c) and they cannot obtain it in the cañons, (d) while at the present mills on the river they cannot secure the

(a) See Test., pp. 380, 381, 382.

(b) See Test., pp. 628, 629, 710.

(c) See Test., pp. 153, 384, 628.

(d) See Test., p. 154.

proper fall, where they have only 8 or 10 feet of slope, and are crowded in near the banks of the river. (a) We have at the mouth of the tunnel 155 feet of fall. (b) We can erect the largest kind of concentrating works, (c) as I have stated, and concentrating can be done there, according to Mr. Luckhardt's statement, at 75 cents a ton. (d)

Mr. WALDRON. Then your theory is, that the tunnel will furnish all the water required for concentrating, but not for power?

Mr. SUTRO. Yes, sir. We mean to use coal or wood (e) for generating power, and we can mill for \$5 a ton by steam power where they are paying \$12 a ton now. We can get coal there, by constructing 35 miles of railroad, at \$12 a ton. (f) So that all the elaborate testimony in regard to that dam, and the removal of the present mills on the river, amounts to nothing. We do not want any dam. We do not require any dam there. We do not interfere with other people's mills. We do not have any interference in any shape at all.

We can pay 65 per cent. for the ore at the mine, without any charge for milling whatever; (g) for we can go to work and take out 90 per cent. of the ore at the mouth of the tunnel, using the water it furnishes, and driving our mills by steam power. That would make a clear saving to the mining companies of \$12 on each ton, or \$12,000 per day, or \$4,380,000 per annum, and, deducting the only expense they would be under—that is, the royalty—it would still leave them a clear saving of \$3,680,000 per year. (h)

EXPLORATION OF THE COUNTRY.

Another important consideration in the construction of the tunnel is the exploration of the country through which it will pass. It will cut a number of lodes nearly at right an-

(a) See Test., pp. 154, 156, 383, 384.

(b) See Test., pp. 155, 156, 157.

(c) See Test., p. 680.

(d) See Test., p. 769.

(e) See Test., pp. 187, 188, 189.

(f) See Test., pp. 630, 670, 713, 773, 774, 775.

(g) See Test., pp. 633, 634, 710, 712.

(h) See Test., pp. 634, 711.

gles before it reaches the Comstock lode, (a) as we find it stated in the commissioner's report. That these veins of ore are of considerable value they do not doubt. They contain immense masses of low-grade ores, which can be reduced at the mouth of the tunnel with advantage and profit, and will largely increase the production of bullion in that section. As a question of science, as a question of geology, of cutting at that depth through a section of country composed of volcanic rocks of three different geological ages, it is of the highest value. Our knowledge of geology is largely derived from superficial observations, and is to a great extent supposititious. Here we make an exact examination of the geological formation of that mountain, going through it at right angles, which will be of immense value geologically, and contribute largely to our knowledge on the subject.

WATER-PRESSURE ENGINES. (b)

To recur now to the value of this tunnel, as far as mining is concerned, it gives us a new basis of operations 2,000 feet below the present surface of much greater advantage than exists commencing at the original surface. (c) In this connection I must refer to this question of water again, and will state that this very water that is found to exist in those mines, which gives so much trouble to get out, can be collected within the mines; and since a large amount of that occurs within the first 500 or 600 feet from the surface, (d) it can be carried down in pipes to the tunnel level, 1,000 or 1,500 feet below the point where it is collected, which gives a column of water capable of operating a vast amount of machinery by means of water-pressure or other hydraulic engines. We have the evidence here that we get 1,400 horse power, and in that way we get power to go down below the tunnel level at least 2,000 feet, or 4,000 feet from the surface.

(a) See Test., p. 651.

(b) See Test., pp. 215, 216, 217, 218, 389, 390, 458, 459, 618, 649, 696.

(c) See Test., pp. 216, 217, 218, 219, 449, 450, 618, 676, 698, 699.

(d) See Test., p. 218.

**WE WILL REACH GREATER DEPTH THAN HAS EVER BEEN REACHED
BEFORE.**

We turn this very water, which is now of immense trouble in the mines, to account; we utilize it to go down below the tunnel level. Now, what do we attain? Why, we get down below the tunnel level 2,000 or 3,000 feet. It allows us to go down into the bowels of the earth 5,000 feet, while the deepest hole dug by man since the world has existed is only 2,700 feet deep; (a) and it remains for the youngest nation on earth to contribute more to science and geology, by giving opportunities of studying the formation of mineral veins at greater depth, than has ever been accomplished by any other nation in the world. We reach down a mile into the earth. If we show practically what scientific men theoretically know to be the case, that these veins reach down indefinitely, it will give a value to our mineral lands which we cannot compute. It is beyond all calculation, the increased value it will give to our mineral domain. It will give confidence to people. It will give confidence in mining operations. I have already shown what an immense saving the tunnel will make in all these different manipulations of mining. It will make a great highway under the mountain. It will be a little underground world by itself in the course of time. We are asking aid from the Government now to help us make four miles of that tunnel, which will result in 200 miles of tunnel. After that four miles is completed, we have a main artery, as it were, and we can spread out and drift under that mountain, and open up new avenues of exploration everywhere. We shall have streets and avenues beneath that mountain. We may employ 20,000 people then. All the capital required will be bone and sinew. (b)

General BANKS. Is that on one lode?

Mr. SUTRO. On that and others. There will be ramifications of drifts on that lode and also on other lodes under

(a) See Test., p. 312.

(b) See Test., pp. 213, 371, 373.

that mountain, (a) and it will take hundreds of miles of streets and avenues to reach them all.

General BANKS. You will want no further aid from the Government at all?

Mr. SUTRO. No further aid at all.

General BANKS. Why will you not want more aid?

Mr. SUTRO. Because, after we make that four miles of tunnel we reach the mines, and have an income then that will make it self-sustaining, and we can run drifts in every direction, and the loan we ask from the Government will be repaid in two or three years after the main tunnel is completed. We shall continue running these tunnels and drifts all under that mountain in every direction. There can be no question about it.

IMMENSE SAVING TO THE MINING COMPANIES.

The royalty these people will pay, which is a perfect trifle to them compared to the benefits they derive, will yield us a large revenue. We have shown here in this testimony, by several of the witnesses, that not over $\frac{1}{3}$ (one witness said only $\frac{1}{4}$) (b) of the mines are producing, and only $\frac{1}{3}$, therefore, will have to pay any royalty to the tunnel. (c) The others will get the benefit for nothing, though their mines will be drained and ventilated. We do not ask a single cent of contribution to the tunnel company until a mine finds ore and is able to pay. Probably only $\frac{1}{17}$ of what they save will be contributed to the tunnel company; (d) and that is under the contracts and under the law of Congress. Here is where the commissioners have made their mistake. They give a statement of the cost, which does not make a fair comparison; they have left out the most important facts. (e) What they do state they give upon the basis of what these superintendents fur-

(a) See Test., p. 734.

(b) See Test., pp. 367, 368.

(c) See Test., pp. 40, 41, 44, 45, 46, 47, 48, 213, 224, 225, 226, 362, 363, 364, 365, 369, 371, 556.

(d) See Test., pp. 159, 203, 204, 225, 226.

(e) See Test., pp. 209, 227.

nish them; the people who are the enemies of this great work, and whose only aim is to break it up if they can, and get hold of it themselves. Now, I want to give a few figures to show the difference between the statements which the commissioners have furnished and those which have been elicited by the testimony. I will show how entirely wrong and incomplete these statements are. According to the commissioners' estimate it would cost about as much to work by the tunnel, and according to one of their calculations would cost more, than what it costs by the present method. I have taken their figures as far as given, for it is quite unnecessary to question them in this calculation. I have simply added what they left out; what they did not bring into account; and they are the most important items. But these figures will tell their own story; they cannot be doubted, for they are based upon the testimony furnished by the commissioners themselves upon their examination, and that of other witnesses.

I will now read this comparative statement, which most conclusively shows an annual saving by the mining companies of \$9,891,151, after paying the royalty and all other expenses.

FAIR COMPARATIVE STATEMENT.

Cost of working by the present method. Taking the commissioners' figures, (a) and adding what they left out.

Hoisting 365,600 tons of pay ore, at 0.51.19 cents-----	\$187,077
Transportation of same to mills, at \$1.50-----	548,400
Pumping for last year (commissioners' estimate)-----	124,674
Hoisting and lowering 3,000 miners, at 8 cents each way, 16 cents-----	175,000
<i>To this should be added:</i>	
Hoisting 365,000 tons waste rock, at \$2 (b)-----	731,200

(a) See Commissioners' Report, p. 9.

(b) See Test., pp. 8, 9, 10, 11, 12, 13, 209, 465, 466.

Indirect cost of pumping at the 16 mines now being worked, including wear of machinery and additions, \$3,000 per month-----	\$456,000
Wages of 3,000 miners, at \$4 per day, \$12,000 (a)-----	4,380,000
Consumption of timber, 16,000,000 feet per annum, \$25 (b)-----	400,000
Cost of milling 365,000 tons of ore, \$10.50 (c)-	3,838,800
Loss by present method of reduction, 35 per cent. on \$23,000,000, assay value (d)-----	8,050,000
Total-----	<u>\$18,891,151</u>

Cost of working by the Sutro tunnel. Taking the commissioners' figures, (e) and adding what they left out.

Lowering 365,600 tons pay ore, at 10 cents---	\$36,560
Transportation of same, average of 5 miles, 50 cents-----	182,800
Transportation of 3,000 miners, at 20 cents, \$600 per day-----	210,000
Royalty on 365,000 tons, at \$2-----	731,000

To this should be added:

Lowering 365,600 tons waste, at 10 cents (f)--	36,560
Transportation of the same, 5 miles, 50 cents (g)-----	182,800
Wages 2,250 miners, at \$4=\$9,000 per day---	3,285,000
(N. B. 2,250 miners, with the thermometer at 70°, will do as much work as 3,000 at 90°. Capacity increased 25 per cent.) (h)	
Consumption of timber per annum, 8,000,000	

(a) See Test., pp. 72, 74, 172, 173, 392, 393, 394, 395, 627, 699, 700, 703, 704.

(b) See Test., pp. 37, 38, 70, 71, 369.

(c) See Test., pp. 58, 157, 158.

(d) See Test., pp. 159, 160, 256, 311, 354, 630, 631, 632, 706, 707, 708, 754.

(e) See Commissioners' Report, p. 10.

(f) See Test., pp. 20, 24, 25, 202, 620, 621, 622.

(g) See Test., pp. 20, 21, 22, 24, 26, 202, 457, 458, 663, 704, 705.

(h) See Test., pp. 72, 74, 172, 173, 392, 393, 394, 395, 627, 699, 700, 703, 704.

feet, \$25, (8,000,000 saved by good ventilation (a)-----	\$200,000
Cost of <i>milling</i> at mouth of tunnel 365,600 tons, at \$5 (b)-----	1,828,000
Loss at mouth of tunnel in reducing and concentrating ores, 10 per cent. on \$23,000,000. (Assay value.) (c)-----	2,300,000
Cost of concentrating, 365,600, at 75 cents (d)-	274,200
Cost of roasting and working concentrations, 36,560 tons, at \$8 (e)-----	292,480
	<hr/>
Annual saving by means of the tunnel, after paying royalty and all other expenses-----	\$9,499,400
	9,391,751
	<hr/>
	\$18,891,151

That is a fair comparison. The commissioners say it will cost more to work by the proposed method. What I have stated here is taken from the testimony. That is clear; and when the people out there say they are fighting against this royalty to the tunnel company, they do not give their true motives, for they still save over \$9,000,000 per annum. It is the Bank of California that opposes us, because if we get mills at the mouth of the tunnel they cannot get the tailings they keep now, and these enormous charges for reducing the ore. It is the Bank of California and its satellites, I repeat, who are fighting this great enterprise. (f) Any one who examines my statement will see I am correct; common sense will teach us that it is so.

THE SUTRO TUNNEL COMPANY.

But I will drop these figures now, and leave them to the examination of thinking men. Mr. Sunderland has made

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- (a) See Test., pp. 37, 38, 70, 71, 369.
 (b) See Test., pp. 157, 158, 159, 634, 711, 712, 769.
 (c) See Test., pp. 161, 623, 708, 709.
 (d) See Test., p. 769.
 (e) See Test., p. 736.
 (f) See Test., pp. 164, 165, 177, 355, 356.

a motion to admit Mr. Foster's statement in relation to the Sutro Tunnel Company. We never objected to its admission at all. General Foster came back here at the request of the attorney of the Bank of California from New York voluntarily, without any orders from the Secretary of War, or any of his superior officers, to testify a second time; and he had a paper which he would not show to anybody. We learned it was a statement in relation to the Sutro Tunnel Company. It is stated that our stock is unassessable. I have said in the course of my remarks that these mining companies levy assessments on their stock, and make the holders pay up for what is spent in milling and other manipulations. We did not want to start out on any such basis. We wanted to protect the miners and laboring men who put their money in the company. We put our stock at \$10 a share, so that these men should have a chance to buy it; and made it unassessable, so they should not be "froze out," as this game is called. The attorney of the Bank of California finds fault with this arrangement, which is intended to protect all the stockholders. Then he states that \$7,000,000 of stock have already been disposed of, whereas only \$5,000,000 remained last year in the hands of the company. Why, gentlemen, this California Bank has been fighting us for six years in this enterprise. We had to dispose of our stock at a sacrifice. It is the history of every large undertaking. It is the history of every railroad company that a part of its stock has gone at low prices in order to interest capitalists. We have gone through immense difficulties, and in getting the first money we had to sell at a very low price; yet Mr. Sunderland makes out that this is a very bad condition of affairs. I think it is quite a natural condition of affairs. I have stated already that we have \$1,450,000 secured, and we do not owe a single dollar. I think that is doing very well indeed. We are giving this to the Government as security. Our means were limited. These men would not permit us to raise money. They wanted to break us up. Now they turn round and charge us with poverty;

after keeping us as poor as it was in their power to keep us, they charge us with not having spent a sufficient amount of money heretofore. But we are spending a great deal of money now, as is shown by a report published a few days ago by me as superintendent of the works. It is a report embracing the three months just past, and gives the figures as taken from the books of the company.

THE REPORT SAYS:

You will perceive by the annexed statements that the expenditures were—

For the month of December, 1871.....	\$28,821 04
For the month of January, 1872.....	43,517 40
For the month of February, 1872.....	50,490 41

Or a total for the three months of..... \$122,828 85

This does not include any expenditures incurred by the San Francisco office.

In December last work was commenced on all four of our shafts, and the same has been prosecuted since with due energy by day and night. On the 24th of this month the progress at the different points was as follows:

Length of tunnel.....	2,801 feet.
Depth of shaft No. 1.....	120 "
Depth of shaft No. 2.....	282 "
Depth of shaft No. 3.....	147 "
Depth of shaft No. 4.....	120 "

The slow progress of shafts Nos. 1 and 4 is accounted for by the fact that a considerable quantity of water has been encountered, and that the pumping machinery was delayed on the road. Shaft No. 2, in which the quantity of water was small, has been progressing steadily ever since its first commencement.

In December last a contract was made with the Diamond Drill Company for the use of diamond drills in all portions of the works. One of these drills has arrived at the tunnel, and experiments are being made for the purpose of ascertaining the best mode of employing it. With these drills it is confidently expected that the monthly advance in the tunnel will be 250 feet, and that of the shafts 150 feet. We may therefore look for a more rapid progress as soon as these are in full operation, which we hope will be the case by June next. (a)

Temporary steam engines and buildings have been erected on all the shafts; also extra boilers and steam pumps have been placed in operation, all of sufficient capacity to reach a depth of 500 to 800 feet. After that depth is reached machinery of much larger dimensions will be required, both for hoisting and pumping.

We have received estimates for the hoisting machinery from four of the machine works at San Francisco, the lowest bid amounting to \$65,000. The cost of transportation and erection, including buildings, will probably amount to a similar sum.

No specifications for large pumping machinery have as yet been submitted. They will be made out shortly, and bids, based upon them, invited from the foundries. A rough estimate of its cost, and placing the same in running order,

(a) See Test., pp. 314, 315, 316, 317, 318, 319, 320, 328, 626, 627.

may be given at \$200,000. All this heavy machinery should be contracted for within the next sixty days, since it will require at least four months to construct and erect the same, it being highly desirable for the rapid prosecution of the work that no delay should occur on that account.

The necessary tools for a first-class machine shop at the mouth of the tunnel—such as lathes, planing machines, drills, &c.—have arrived, and a suitable building and steam engine have been erected.

We have almost completed an excellent wagon road, commencing at the mouth of the tunnel, leading over the first summit, at an elevation of 1,350 feet, to shaft No. 2, situated in a ravine just beyond. From that point an old road to Virginia City has been placed in repair.

The poles for a telegraph line from Dayton to the mouth of the tunnel, and from thence to the four shafts and Virginia City, have been placed in position, and instruments at seven different stations will be in operation before long.

We have erected commodious boarding and lodging houses for the accommodation of the men at each of the four shafts; also a new one of much larger dimensions at the mouth of the tunnel.

The number of men employed was:

During December	159 men.
During January	231 "
During February.....	326 "

I have since received the accounts for March. The expenses for that month were \$47,589 94, and the progress at the different points was as follows:

Length of tunnel.....	2,852 feet.
Depth of shaft No. 1.....	165 "
" " " " 2.....	384 "
" " " " 3.....	210 "
" " " " 4.....	200 "

Mr. Sunderland has informed us here that the Bank of California is not a stock-jobbing concern; but that the Suro Tunnel Company is, because we have not made our shares assessable. I do not see the philosophy of that. If you have stock that is assessable, you can break it down or put it up, according to the assessments which are levied. If they are unassessable, you cannot do that; they have a certain given value. Mr. Sunderland, furthermore, goes on to say that we started seven years ago, when these contracts were made six years ago; and that they refused to put in any money in New York and California for a long time. Why, that is nothing to be wondered at. The machinations of the Bank of California were going on all this time, and they determined to stop us; and now they have the assurance to charge us with not raising money any sooner, when it is a known fact they repudiated all subscriptions.

HISTORICAL OPPOSITION TO GREAT IMPROVEMENTS.

It is, however, a historical fact, that there has been opposition to all kinds of improvements either by the ignorant, the envious, or by those who were interested in keeping up the old state of affairs, since the world began. If you even look back to the great mechanical improvements that have been made, the introduction of the spinning jenny, and even that of sewing machines, you will find there was opposition. Every sewing girl in the country opposed sewing machines. They thought their occupation would be gone. We find many curious things related in history. Take Galileo, when he announced the discovery of a new planet. They scouted the idea. There had only been seven planets known before that; and the whole of Italy stood up in perfect horror. They preached against him from the pulpit everywhere, and the argument used against his discovery was, that it was impossible that there should be more than seven planets, because there were no more than seven days in a week, and no more than seven openings in a man's skull. That is the kind of argument they used, and some as unreasonable have been used against many new ideas. Look at the arguments used against the first railroad in England. They were of the most extraordinary and unreasonable kind. It makes us smile to read them now. There are many points resembling this fight against the tunnel. If you substitute the Bank of California for the Duke of Bridgewater, and Mr. Sharon for Mr. Bradshaw, you have a perfectly parallel case. But I will read:

THE LIVERPOOL AND MANCHESTER RAILWAY. (a)

The rapid growth of the trade and manufactures of South Lancashire gave rise, about the year 1821, to the project of tramroad for the conveyance of goods between Liverpool and Manchester. Since the construction of the Bridgewater canal by Brindley, some fifty years before, the increase of the business transacted between the two towns had become quite marvelous. The steam engine, the spinning jenny, and the canal, working together, had

(a) See "Lives of the Engineers," by Sam. Smiles, vol. III. London, 1862.

accumulated at one focus a vast aggregate of population, manufactures, and trade.

The Duke's canal, when first made, furnished a cheap and ready means of conveyance between the seaport and the manufacturing towns, but had now become entirely inadequate. Mr. Huskisson, in the House of Commons, referring to the ruinous delays occasioned, observed that cotton was sometimes delayed a fortnight at Liverpool, while the Manchester manufacturers were obliged to suspend their labors.

Expostulation with the canal companies was of no use. They were overcrowded with business at their *own* prices, and disposed to be very *dictatorial*.

Under these circumstances any new mode of transit between the two towns, which offered a reasonable prospect of relief, was certain to receive a cordial welcome. Mr. Sanders, an influential Liverpool merchant, was among the first to advocate a tramroad. Having caused inquiry to be made as to the success which had attended the haulage of heavy coal trains by locomotive power, he was led to form the opinion that the same means might be employed in the transportation of merchandize. He ventilated the subject among his friends, and about the beginning of 1821 a committee was formed for the purpose of bringing the scheme of a railroad before the public.

The novel project, having become noised abroad, attracted the attention of the friends of railways in other quarters. Sir Richard Phillips, in his "Morning Walk to Kew," already said, in 1813: "I found delight in witnessing at Wandsworth the economy of horse labor on the iron railway. Yet a heavy sigh escaped me as I thought of the inconceivable millions of money which had been spent about Malta, four or five of which might have been the means of extending double-line railways from London to many parts of England. Such would have been a legitimate motive for *overstepping the income of a nation*, and the completion of so great and useful a work would have afforded national ground for public triumph or general jubilee."

Thomas Gray, of Nottingham, was another speculator on the same subject. Though he was no mechanic or inventor, he had an enthusiastic belief in the railroad system. It would appear that Gray was residing in Brussels, in 1816, when the project of a canal from Charleroi was the subject of discussion, and in conversation with Mr. John Cockerill and others, he took advantage of advocating the superior advantages of railways. He occupied himself for sometime with the preparation of a pamphlet on the subject. He shut himself up in his room, secluded from his wife and relations, declining to give them any information on the subject of his mysterious studies, beyond the assurance that his scheme "would revolutionize the whole face of the material world and society."

In 1820 Mr. Gray published the result of his studies in his "Observations on a General Iron Railway."

The publication of this essay had the effect of bringing the subject of railways prominently under the notice of the public. Although little able to afford it, Gray also pressed his favorite project on the attention of public men: mayors, members of Parliament, and prime ministers. He sent memorials to Lord Sidmouth in 1820, and to the Lord Mayor and corporation of London in 1821. In 1822 he addressed the Earl of Liverpool, Sir Robert Peel, and others, urging *the great national importance* of his plan. In the year following he petitioned the ministers of state to the same effect. He was so pertinacious that public men pronounced him to be a "bore;" and in the town of Nottingham, where he then lived, those who knew him declared him to be "cracked." William Howitt, who frequently met Gray at that time, has published a long portraiture of this indefatigable and enthusiastic projector, who seized all men by the button, and would not let them go until he had unraveled to them his wonderful scheme. With Thomas Gray, says he, "begin where you would, on whatever subject—the weather, the news, the political movement or event of the day—it would not be many minutes before you

would be enveloped with steam, and listening to a harangue on the practicality and immense advantages to the nation, and to every man in it, of a general iron railway."

These speculations show that the subject of railways was gradually becoming familiar to the public mind, and that thoughtful men were anticipating with confidence the adoption of steam power for railway traction. At the same time a still more profitable class of laborers was at work: first, men like Stephenson, who were engaged in improving the locomotive; and, next, those like Edward Pease, of Darlington, and Joseph Sandars, of Liverpool, who were organizing the means of laying down the railways.

In 1821 Mr. Sandars authorized Mr. William James, of Bromwich, to survey the proposed railway line between Liverpool and Manchester, and agreed to pay him for the survey at the rate of £10 per mile, or £300 for the survey.

The trial survey was then proceeded with, but it was conducted with great difficulty, the inhabitants of the district entertaining the most violent prejudices against the formation of the proposed railway. In some places Mr. James and his surveying party even encountered personal violence. Near Newton-in-the-Willows, the farmers stationed men at the field gates, with pitchforks and sometimes with guns, to drive them off. A number of men, women, and children collected and ran after the surveyors, bawling nicknames and throwing stones at them.

Mr. Sandars had by this time visited George Stephenson at Killingworth, and was charmed with him at first sight. The energy which he had displayed in carrying on the works of the Stockton and Darlington railway, his readiness to face difficulties, and his practical ability in overcoming them; the enthusiasm which he displayed on the subject of railways and railway locomotion concurred in satisfying Mr. Sandars that he was, of all men, the best calculated to help forward the Liverpool undertaking at this juncture.

On his return he stated this opinion to the committee, and George Stephenson was unanimously appointed engineer of the projected railway.

A public meeting was held to consider the best plan to be adopted, and a committee was appointed to take the necessary measures for the construction of the road. Before entering upon their arduous duties they first waited on Mr. Bradshaw, the Duke of Bridgewater's canal agent, in the hope of persuading him to increase the means of conveyance, as well as to reduce the charges; but they were met with an unqualified refusal. They suggested the expediency of a railway, and invited Mr. Bradshaw to become a proprietor of shares in it. But his reply was, "All or none." The canal proprietors, confident in their imagined security, ridiculed the proposed railway as a chimera. *It had been spoken about years before, and nothing had come of it then. It would be the same now.*

In the meantime the survey was proceeded with, in the face of the great opposition on the part of the proprietors of the lands through which the railway was intended to pass. The prejudices of the farming and laboring classes were strongly excited against the persons employed upon the ground, and it was with the greatest difficulty that the levels could be taken.

When the canal companies found that the Liverpool merchants were determined to proceed with their scheme—that they had completed their survey, and were ready to apply to Parliament for an act to enable them to form the railway—they at last reluctantly, and with bad grace, made overtures of conciliation. They promised to supply steam vessels, both on the Mersey and the canal. At the same time they made a show of lowering their rates. *But it was all too late;* for the project of the railway had now gone so far that the promoters (who might have been conciliated at an earlier period) felt they were very fully committed to it, and now they could not very well draw back. Arrangements were therefore made for proceeding with the bill in the parliamentary session of 1825.

On this becoming known, the canal companies prepared to resist the measure tooth and nail. The public were appealed to on the subject; pamphlets

were written, and newspapers were hired to resist the railway. It was declared that its formation would prevent cows grazing and hens laying. The polluted air from the locomotives would kill birds as they flew over them, and render the preservation of pheasants and foxes no longer possible. Householders adjoining the projected line were told that their houses would be burnt up, while the air around would be polluted by clouds of smoke. There would no longer be any use for horses, and if railways extended the species would become extinguished, and oats and hay be rendered unsaleable commodities.

A Birmingham journal invited a combined opposition to the measure, and a public subscription was entered into for the purpose of making it effectual. The newspapers generally spoke of the project as a mere speculation, some wishing it success, although greatly doubting, others ridiculing it as a delusion, similar to the many other absurd projects of that madly speculative period. The idea thrown out by Mr. Stephenson, of traveling at a rate of speed double that of the fastest mail coach, appeared at the time so preposterous, that he was unable to find an engineer who would risk his reputation in supporting such "absurd views." Speaking of his isolation at the time, he subsequently observed that he had then no one to tell his tale to but Mr. Sanders, of Liverpool, who did listen to him, and kept his spirits up; and his schemes were at length carried out only by dint of sheer perseverance.

George Stephenson's idea was at that time regarded as but a dream of a chimerical projector. It stood before the public friendless, struggling hard to gain a footing, and scarcely daring to lift itself into notoriety, for fear of ridicule; and when no leading man of the day could be found to stand forward in support of the Killingworth mechanic, its chances of success must indeed have been pronounced but small.

Parliamentary contest on the Liverpool and Manchester bill.

The Liverpool and Manchester bill went into Committee of the House of Commons on the 21st of March, 1825. There was an extraordinary array of legal talent on the occasion, but especially on the side of the opponents to the measure. Their wealth and influence enabled them to retain the ablest counsel at the bar.

Evidence was taken at great length as to the difficulties and delays of forwarding goods from Liverpool to Manchester, the utter inadequacy of the existing modes of conveyance, and as to the practicability of a railroad worked by locomotive power. Mr. Adams, in his opening speech, referred to the cases of the Hilton and Killingworth railway, where heavy goods were safely and economically transported by means of locomotive engines. "None of the tremendous consequences," he observed, "have ensued from the use of steam in land carriage that have been stated. The horses have not started, nor the cows ceased to give their milk, nor have ladies miscarried at the sight of these things going forward at the rate of four miles and a half an hour."

Mr. Stephenson stood before the committee to prove what the public opinion of the day held to be impossible. The self-taught mechanic had to demonstrate the practicability of that which the most distinguished engineers of the time regarded as impracticable. Clear though the subject was to himself, and familiar as he was with the powers of the locomotive, it was no easy task to bring home his convictions, or even to convey his meaning, to the less informed minds of his hearers. In his strong Northumbrian dialect he struggled for utterance, in the face of the sneers, interruptions, and ridicule of the opponents of the measure, and even of the committee, some of whom shook their heads and whispered doubts as to his sanity when he energetically avowed that he could make the locomotive go at the rate of twelve miles an hour.

One of the members of the committee pressed the witness a little further, and put the following case: "Suppose, now, one of these engines to be going along a railroad at the rate of nine or ten miles an hour, and that a cow were to stray upon the line: would not that, think you, be a very awkward circum-

stance?" "Yes," replied the witness, with a twinkle in his eye, "very awkward—for the coo."

After some distinguished engineers had been examined, Mr. Alderson summed up in a speech which extended over two days. He declared Mr. Stephenson's plan to be "the most absurd scheme that ever entered into the head of a man to conceive. My learned friends," said he, "almost endeavored to stop my examination; they wished me to put in the plan, but I had rather have the exhibition of Mr. Stephenson in that box. I say he never had a plan—I believe he never had one—I do not believe he is capable of making one."

Mr. Harrison, in summing up the case of the canal companies, said: "At length we have come to this: having first set out at twelve miles an hour, the speed of these locomotives is reduced to six, and now comes down to two or two and a half. They must be content to be pulled along by horses and donkeys, and all those fine promises of galloping along at the rate of twelve miles an hour are melted down to a total failure."

After further personal abuse of Mr. Stephenson, whose evidence he spoke of as "trash and confusion," he closed the case of the canal companies on the 3d of May. Mr. Adams replied for the promoters, vindicating Mr. Stephenson and the evidence which he had given before the committee.

The committee then divided on the preamble, which was carried by a majority of only one. The clauses were next considered, and, on a division, the first clause, empowering the company to make a railway, was lost; also the next clause, empowering the company to take land.

Thus ended this memorable contest, which had extended over two months; carried on throughout with great pertinacity and skill, especially on the part of the opposition, who left no stone unturned to defeat the measure.

The result of this first application to Parliament was so far discouraging. Mr. Stephenson had been so terribly abused by the leading counsel for the opposition, stigmatized by them as an ignoramus, a fool, and a maniac, that even his friends seem for a time to have lost faith in him and his locomotive system, whose efficacy he nevertheless continued to uphold. Things never looked blacker for the success of the railway system than at the close of this great parliamentary struggle, and yet it was on the very eve of its triumph.

The Committee of Directors, appointed to watch the measure in Parliament, determined at once to make a new survey, and not to employ Mr. Stephenson for the purpose. The survey was completed, and the bill again went before Parliament. It went before the committee on the 6th of March, and on the 16th the preamble was declared proved. On the third reading in the House of Commons an animated debate took place, and the bill carried; it almost unanimously passed the House of Lords.

Mr. Stephenson was now elected principal engineer of the road, and to his skill and intelligence were mainly due its early and satisfactory completion.

THE BANK OF CALIFORNIA AND THE DUKE OF BRIDGEWATER.

We might search through history and not find a more parallel case than the one I have just quoted. As I have stated, all we have to do is to substitute the Bank of California for the Duke of Bridgewater and the name of Sharon for that of Bradshaw, and the parallel is perfect. The Duke of Bridgewater, with an army of attorneys, went to Parliament and presented his budget of objections. We find the Bank of California present here in Congress

with theirs. (a) Look at the testimony which has been taken in this case, and see how absurd some of the objections raised must appear to you; in ten years from now the parties making them will be ashamed of ever having occupied such a position.

They have come here to prove that it is cheaper to pump out water from a depth of 2,000 feet than to let it flow out by itself. They would have you believe that white is black, or that water will flow up hill of its own accord.

It took years of persistent efforts to succeed with the first railroad against the machinations of its enemies. I have been for years trying to sustain myself against the unscrupulous influence of the Bank of California, and am proud to say we are now on the full road to success, thanks to the noble-hearted friends I have found in and out of Congress. Mr. Stephenson found one sterling, unflinching friend to stand by him, and that was Mr. Joseph Sandars, of Liverpool; and I want to pay tribute right here to a noble-hearted, far-seeing, generous, and true man, who has stood by me in the darkest hours of my trials, who has counseled and assisted me at all times, who has appreciated the magnitude and importance of the work to which I have devoted myself. That man's name is Joseph Aron, a resident of San Francisco.

I have recited the objections which were raised against the first railroad not quite fifty years ago. That road was built, notwithstanding the bitter and persistent opposition of the Duke of Bridgewater, who considered himself aggrieved and injured in his canal property should the road be constructed. And what was the result? The developments and industry created by the new facilities for traffic were so great, that the canal property became more valuable than ever, and the example set immediately created a perfect furor for building railroads, not only in England, but all over the world. To the success of this first railroad was due the construction of railroads in every country on the

(a) See Test., p. 16.

globe. The public, which is skeptical and unbelieving, only needed one single practical illustration of success. The moment that was achieved opposition to railroads ceased to exist.

A THOUSAND TUNNELS IN THIS COUNTRY.

Let this *one* tunnel be constructed, and the magnificent results become known which will flow from it, it will result in the construction of a thousand more (*a*) by private enterprise throughout our vast mining regions. (*b*) A new system of mining and reduction will be inaugurated, and the necessary capital will flow in that direction without any further effort. (*c*) The magnificent inheritance of our mineral domain will commence to be fully appreciated; that great treasure chest, which Providence has given us, will be unlocked; the nation will be enriched; (*d*) trade and traffic will receive an impetus unknown heretofore; and our national debt will sink into insignificance compared to the wealth this country will then be known to possess.

The treasure contained in this Comstock lode alone is beyond computation; the developments made within the last twelve months, at the greatest depth which has yet been reached—1,500 feet beneath the surface (*e*)—has convinced the most incredulous. It is sufficient to stagger the mind when contemplating what treasure will be developed at a depth of 4,000 or 5,000 feet, which can be reached by means of this tunnel.

DUTY OF THE GOVERNMENT.

As far as the duty of the Government is concerned, it is very plain. There can be no question that these mines on the Comstock lode are the most important in the whole world, and I do not believe that any other nation ever possessed a

(*a*) See Test., pp. 210, 211, 220, 302, 615, 616.

(*b*) See Test., pp. 599, 600.

(*c*) See Test., pp. 210, 220, 302, 313, 601, 615, 616, 637, 638, 657, 668.

(*d*) See Test., pp. 221, 295.

(*e*) See Test., pp. 220, 286, 303, 640, 684.

series of mines as valuable as these are. (a) Any nation on the globe would be proud to possess such a property within the boundaries of its country. If we inquire as to the motives of Napoleon in sending an expedition of conquest to Mexico, we find that he was anxious to secure the mineral products of that country. We have in Nevada a single vein of ore almost as important as all the mineral wealth of Mexico. These mines are now worked for stock-jobbing purposes, and are the worst managed property on the face of the globe. (b) Having mines of that importance, it is to the interest of the Government to have that state of affairs cease to exist. They are worked in the most extravagant manner. (c) The precious metals are wasted, and they furnish the worst kind of an example for other mines. They discourage the people from going into mining operations; and what we want is capital to flow into that western country. As long as we have no capital flowing there we cannot open up our mineral wealth. We have authentic accounts that those mines have yielded \$125,000,000, and that they are now yielding \$15,000,000 a year; and I mean to say that if the tunnel was in, the yield would be increased to from \$30,000,000 to \$50,000,000 per annum.

Scientific men may say what they please about the continuance of mineral veins in depth; it has no effect. I have been for six or seven years in contact with financial men, and they do not believe in any theories. In the first place, they are too unscientific as a class to understand geological evidences and deductions; and, in the second place, they are too much occupied to bother themselves about it. They can make money easy enough without making such investigations, and they will not trouble themselves about it. But if you demonstrate it practically that these mines reach down, and that they can be worked profitably, to great depth, money will flow in that direction of its own accord; (d)

(a) See Test., pp. 63, 207.

(c) See Test., pp. 212, 281, 663.

(b) See Test., pp. 301, 662, 663.

(d) See Test., pp. 210, 211, 214, 220, 684.

and, as I stated, thousands of tunnels will be made in our western hills; thousands of millions of taxable property will be created, and the increase of bullion will be immense. As regards political economy, I will not tire you out by quoting any authorities thereupon. You all know that it has an important bearing upon the payment of the national debt. (a) We have the authority of Chevalier, John Stuart Mill, Bowen, and others on that subject.

SECURITY TO THE GOVERNMENT.

As far as the security we offer is concerned, it is ample. We have asked that question of almost every witness we have had here, and they do not doubt it. They know this royalty alone will enable us to pay back the money loaned us. Professor Newcomb and Mr. Luckhardt say that it cannot be questioned; (b) and I venture to say that many times the amount could be returned, if it were required. All we ask is the good-will of the Government to help us make the first four miles of this tunnel, and then we will make a hundred miles in addition. We do not ask any gift of the Government. We only ask for so much help to get this tunnel in. We give the Government the first mortgage on this property; and, as has been shown here by every witness, there is no question about the security at all. Even if there were not an abundance of ore below the tunnel level, the low-grade ores, which amount to hundreds of millions of dollars, which we shall be able to extract above the tunnel alone, will secure several times what we ask. (c) These people who oppose the tunnel say there is no necessity for any aid; that the land at the mouth of the tunnel will be worth \$3,000,000, (d) and that the income will be \$6,000,000 per annum. That is all very well to tell us; but we may not have a dollar of income until the tunnel is completed to the Comstock lode. If we have an in-

(a) See Test., pp. 313, 542.

(b) See Test., pp. 210, 211, 636, 672.

(c) See Test., pp. 19, 63, 151, 152, 205, 206, 267, 208, 398, 555, 684, 685, 733.

(d) See Test., p. 557.

come of from \$2,000,000 to \$6,000,000 per annum thereafter, we can pay that money back very soon. We are now at work on this tunnel. We are pushing it forward day and night. We have invested the limited capital we have, and are pushing it along, to show our own faith in the work. Now, the Government ought to step in and come to the rescue. Our money will probably be exhausted in another year from now, and the work may come to a stand-still.

Mr. Sunderland has criticized this bill. He says this bill is for Mr. Sutro, and that it does not mortgage all the property. Now, we ask you, gentlemen of the committee, to make that bill so perfect that there can be no doubt about the security given by a first mortgage. We want to mortgage to the Government the royalty we receive from these mines; and that royalty is as good security as the Government would ask; and we want to mortgage everything we have besides. According to the statements made, we have \$700,000 a year to receive from royalty, while these people are saving \$9,000,000 at the present capacity alone. If the yield is trebled, which it likely will be, why the income from that source will be \$2,100,000, and the saving to the mines \$27,000,000 per annum. We are asking for a loan here, and not for a gift. The Government will have entire control and revision of our accounts. Unless we make a correct report of the income, our rights are forfeited; and there are commissioners to be appointed under the law who make their reports to the Government.

THE BANK OF CALIFORNIA COMPOSED OF PATRIOTIC MEN.

Mr. Sunderland has told us that if the Government puts its money in, it ought to own the tunnel. It is not the policy of this Government to go itself into such enterprises; but it is the policy of the Government to foster great interests, and aid in the development of the country. The Government does not want to go into mining operations and own these works. The attorney of the Bank of California has told us that if we get this aid, our stock would go up to par, thus enabling us to fight them. He cannot

mean that we will fight them, but we will be able to take care of ourselves and resist their opposition; but if we do not get this aid, they can continue their fight and prevent us from obtaining the means to construct the tunnel, for they still cling fondly to the hope that they can delay us in obtaining the means, and thus possibly break us up yet. What interest have they in coming on here to Washington and opposing a loan to this work? Are they such patriotic men that they come here to advise the Government what to do? Why, the very fact that they have agents here to oppose us ought to help us. They have been trying to show all along that this tunnel is useless. They come here lobbying against us, and trying to upset this great work, in order to leave us to our fate. We have spent hundreds of thousands of dollars already, and we expect to expend \$1,000,000 before we will receive a dollar from the Government.

WILL CONGRESS ASSIST THE LABORING MEN.

Let us look at the other side of this question. Who are the people favoring this work? Why, the laboring men. Every one of these witnesses has shown that the laboring men and the Miners' Union are favoring it, (a) while the Bank of California is opposed to it. Now, I say, will the Government consider the interests of these laboring men? They have invested their savings in this tunnel; and while this Government has done much for great corporations, let it come forward now and assist these laboring men. (b) These working men are interested in this tunnel; hundreds, nay, thousands of them are now or will be. (c) They want to see this work carried out. They want to be relieved from the terrible doom they are condemned to in those mines, exposed to a heat of 110°, breathing air almost deprived of oxygen, which slowly kills them. We have had an instance at Gold Hill where *forty-two* miners were burned to death. (d)

(a) See Test., pp. 17, 166, 168, 208, 311, 355, 463, 464.

(b) See Test., pp. 186, 385, 386, 387, 395.

(c) See Test., p. 312.

(d) See Test., p. 465.

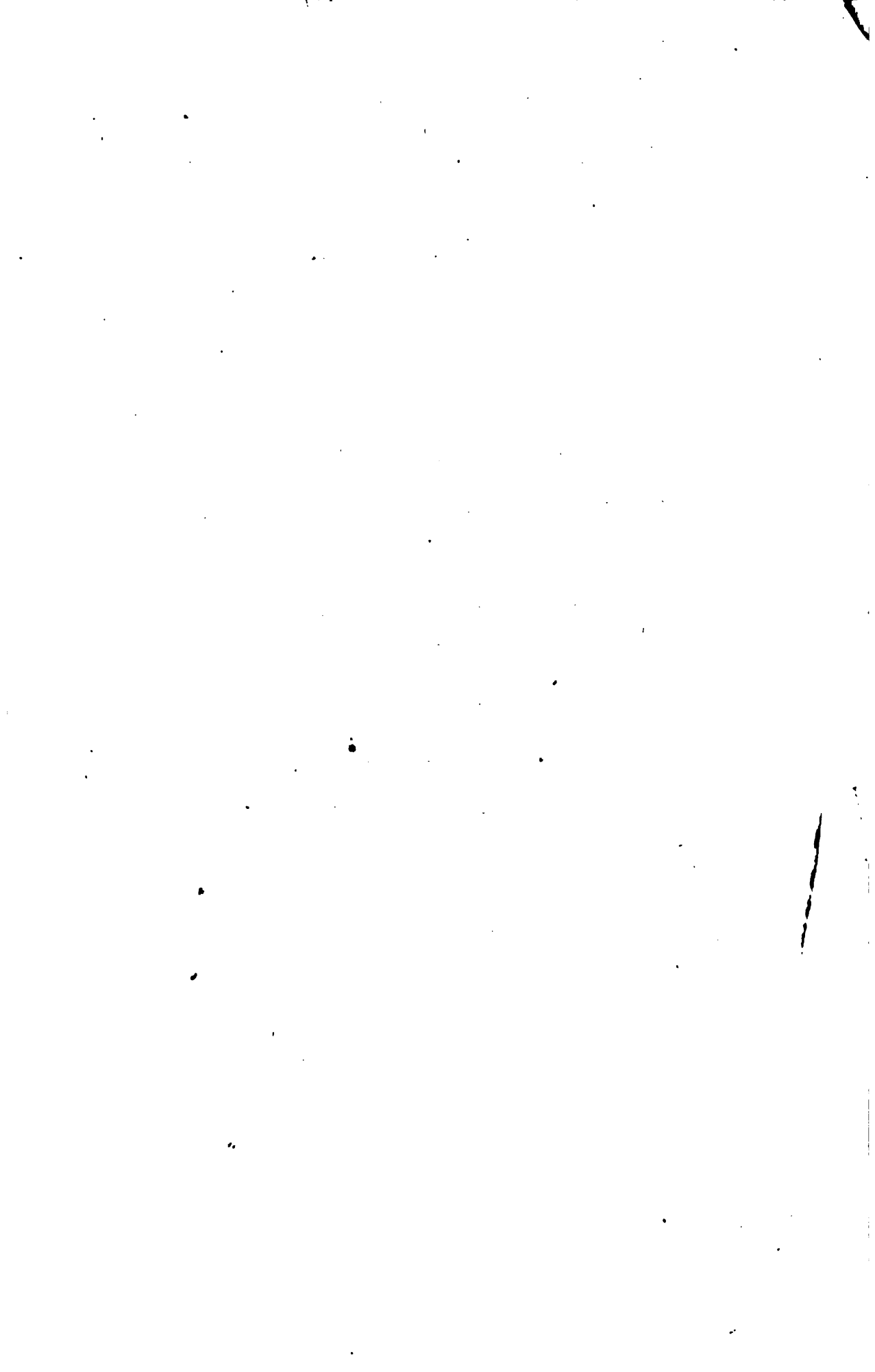
Mr. Chairman and gentlemen of the committee, I will now close my remarks. I must have almost exhausted your patience in having you listen to me so long, though I am sure I have not done half justice to this great subject.

In closing, then, I want to call your attention to the fact once more, that this is not a gift, not a subsidy, not an absolute expenditure by the Government; but simply the extension of its good-will, the granting of a loan, with the most ample security, to assist in the execution of a work which must enhance the property value of this country to the extent of thousands of millions; and let me say to you, gentlemen, that you will point with a feeling of pride to the day when, by voice and vote, you assisted in the execution of a work which will hereafter be looked upon as a proud monument to the enterprise of the American people.

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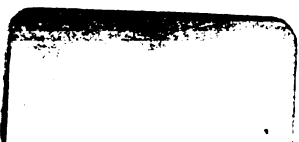
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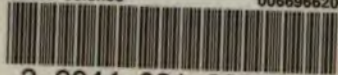








Closing argument of Adolph Sutro, o
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